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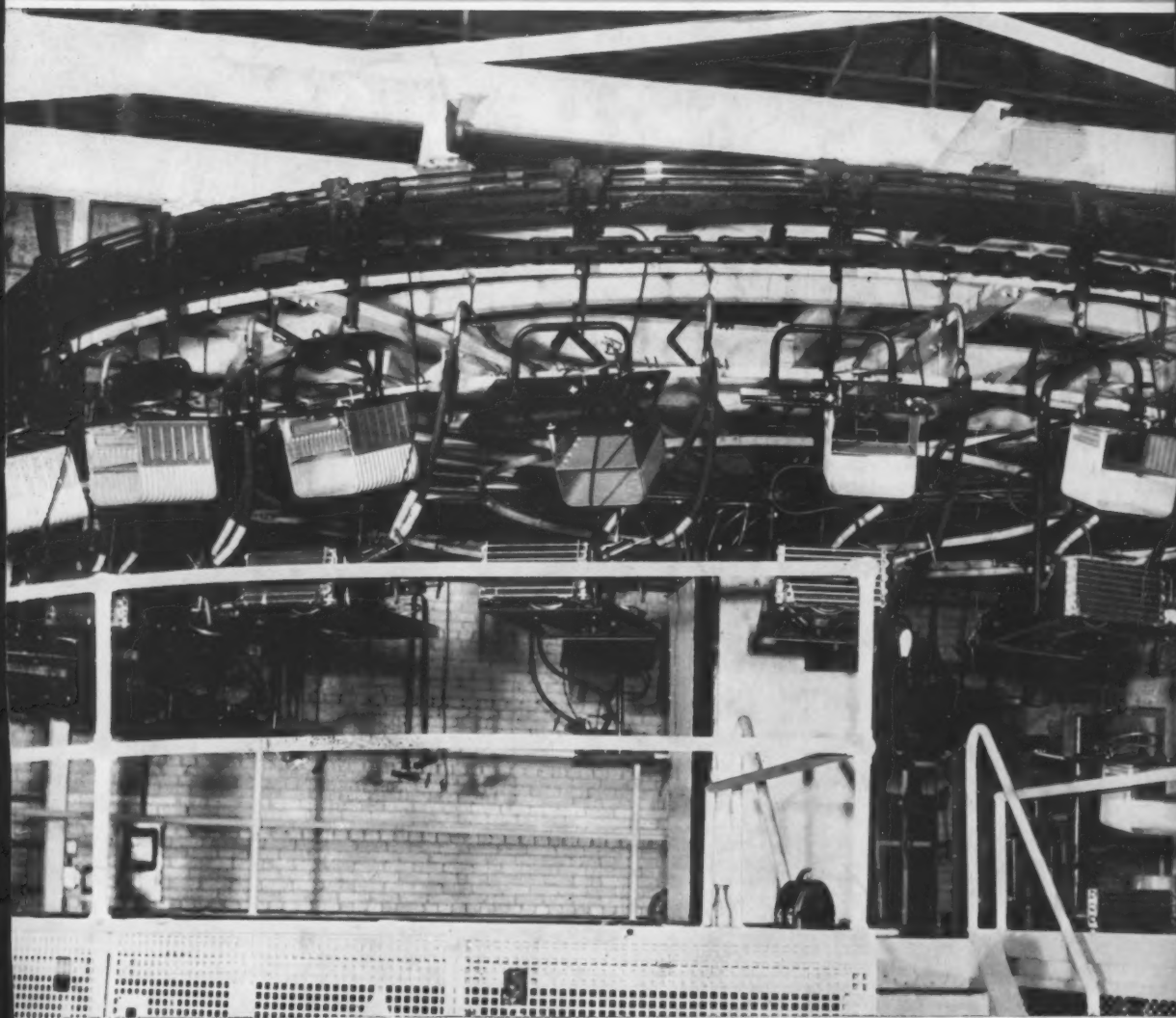
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THE *Refrigeration* **Industry**

INSTALLATION
MAINTENANCE
MERCHANDISING

OCTOBER, 1945

AIR CONDITIONING
MACHINERY



Circulation of This Issue 21,011

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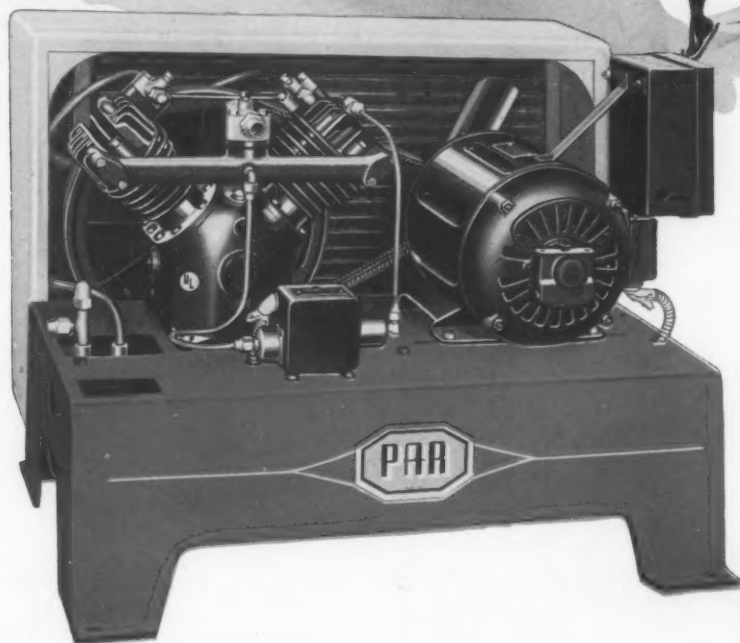
THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO
Plants: Cleveland, Columbia City, Ind., Los Angeles,
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This Weatherhead product is an outstanding example of the engineering "know-how" with which we have endowed all our refrigeration parts. The "Simplicity" Packless Valve was designed-in-use to insure economical long life and trouble-free operation. This product is available in a wide variety of sizes, both flared and solder types.

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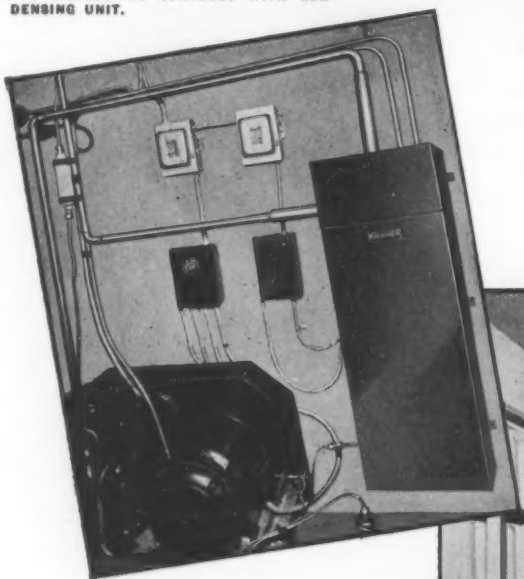
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OCTOBER, 1945

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by
KRAMER

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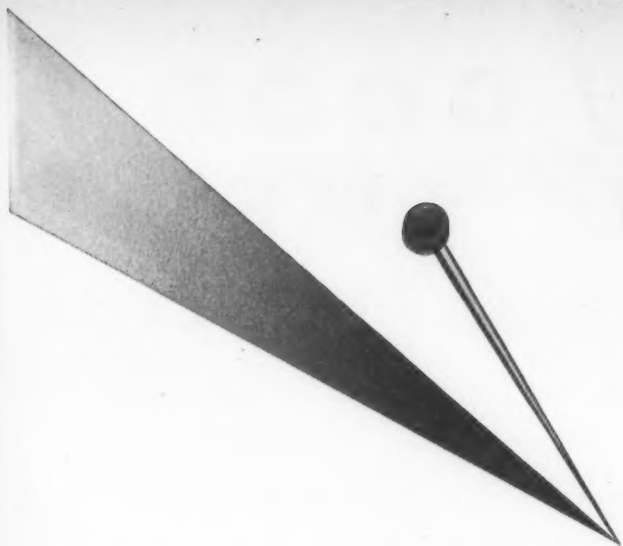


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ROOM.

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Trenton, New Jersey



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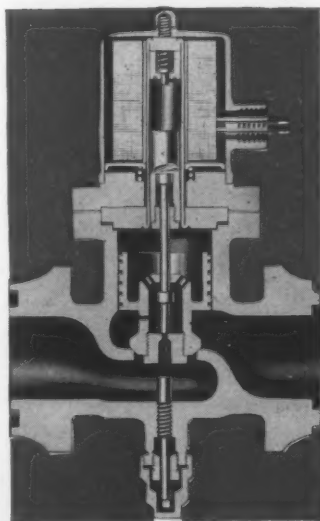
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THE REFRIGERATION INDUSTRY

THE *Refrigeration* INDUSTRY

VOLUME 2, No. 10

OCTOBER, 1945

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CONTENTS

THE COVER . . . 'Round and around this giant wheel goes, and as it does the refrigerating units on it are evacuated. This scene from G-E's Erie (Pa.) works typifies the renewed activity in the household refrigerator field as manufacturers prepare to market their first models since early 1942. More photos on pages 24 and 25 of this issue.

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REFRIGO GEL

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Uniform—no channeling.

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Universal—effective with all types of refrigerants.

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REFRIGO GEL**

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Patented DIAPHRAGM PACKLESS

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the
Latest
Engineering
Developments
for the*

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CONDITIONING
AND
REFRIGERATION
INDUSTRY**

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control of household,
commercial or industrial
Air Conditioning and Re-
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work with you.

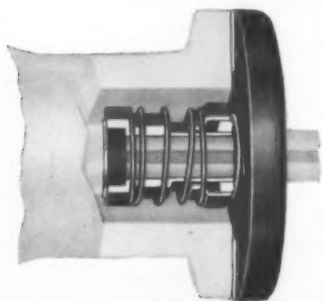
**KEROTEST
MANUFACTURING CO.**
PITTSBURGH, PA.

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just fifteen manu-
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the 'Fifth Star' and
honored for their
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IN THE NIGHT...
BUT THE **ROTARY** COP
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The fact that ROTARY SEALS, in addition to widespread use by leading service organizations, are also used extensively as original equipment by many compressor manufacturers testifies to their superiority.

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Products your customers will want . . .

A Policy you will approve

THE PRODUCTS illustrated here embody refinements of design, quality of materials and skillful construction that will make them one of the refrigeration industry's outstanding lines. Some of these products are being manufactured now, and will soon be available. The others will be in production in the immediate future, as the Albert H. Bromann, Jr. organization completes a vital war assignment and reconverts for peace.

Custom Built Products

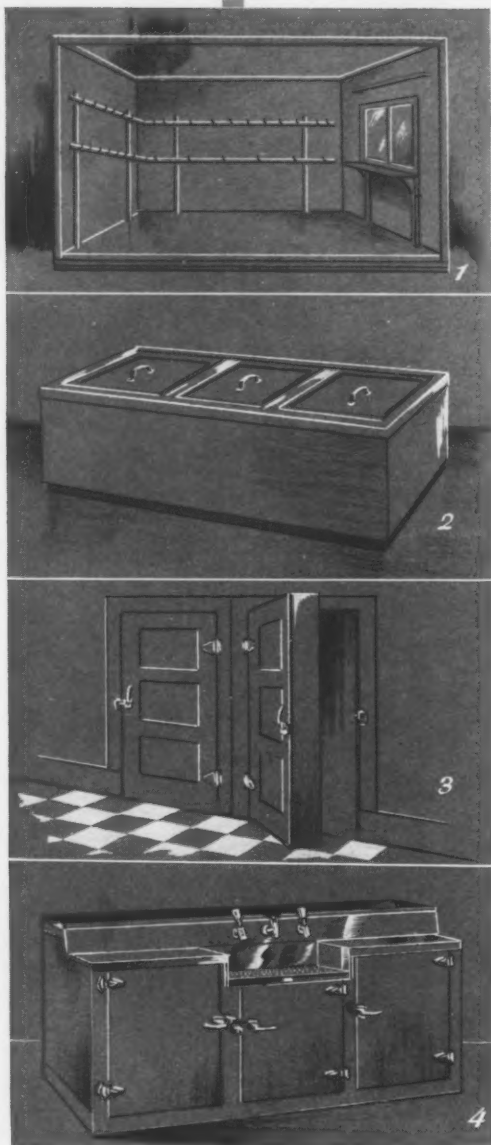
- 1** Complete Cooling Rooms
- 2** Cabinets for Industrial and Commercial Freezers

Standard Products

- 3** Cold Storage Doors
- 4** Direct Draw Beer Dispensers

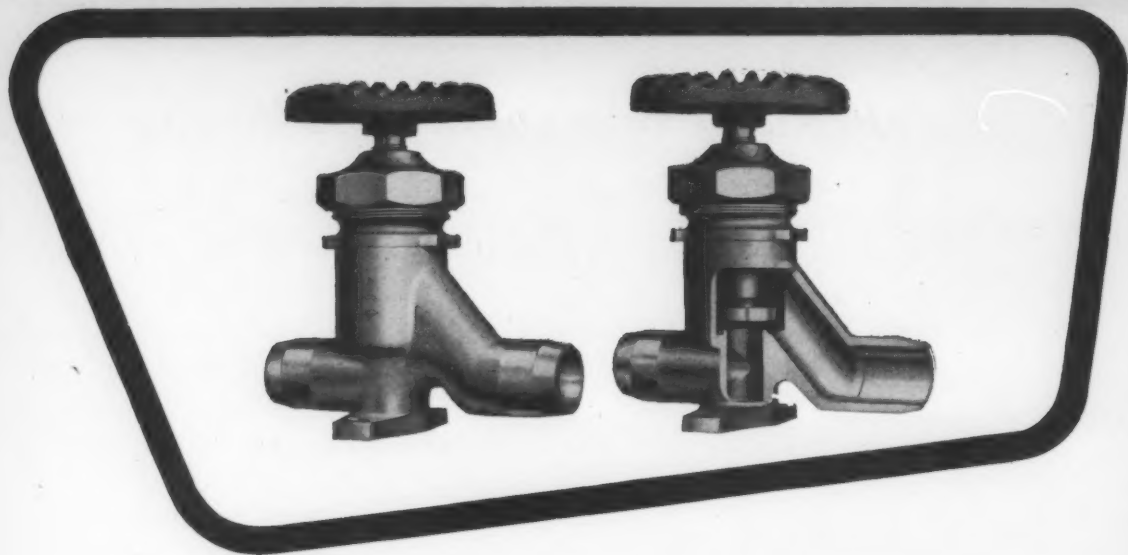
THE POLICY of the Albert H. Bromann Jr. organization is to sell these products only through recognized, established refrigeration dealers. No product will be sold direct to users at any time, or under any circumstances.

If you are interested in handling one of the outstanding lines in the post war refrigeration field, on a basis that assures substantial and protected profits, we cordially invite you to get in touch with us.



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AN *Extension* OF *Sizes*
 NOW INCLUDED IN OUR LINE OF
 TRIPL-SEAL DIAPHRAGM VALVES

These valves incorporate all the advantageous features of our famous TRIPL-SEAL Diaphragm Valves.

HERE ARE SOME OF THEM

Because of the small amount of movement, the multiple diaphragm in TRIPL-SEAL Valve is never deflected past its normal center, thus immeasurably prolonging both its life and the life of the valve in service.

The multiple diaphragm has approximately 20% increased surface area over more conventional types of diaphragms. A single turn only is necessary to open or close the TRIPL-SEAL Valve.

TRIPL-SEAL

Positive sealing at three essential points in the valve is adequately provided for—a back seat with valve in open position,—the multiple diaphragms,—and a packing around the stem. (This packing insures constant seal between pressure lines and diaphragm chamber.)

The stem of the TRIPL-SEAL Valve is provided with a sixty degree bevel, thus procuring the most desirable wedging action for positive and easy closing. It is manufactured from Tuf-Stuf, a strong, corrosion-resistant alloy.

The stem does not rotate, and is constantly guided into the same position against the seat by a cylindrical guide, so processed as to eliminate any possibility of distortion.

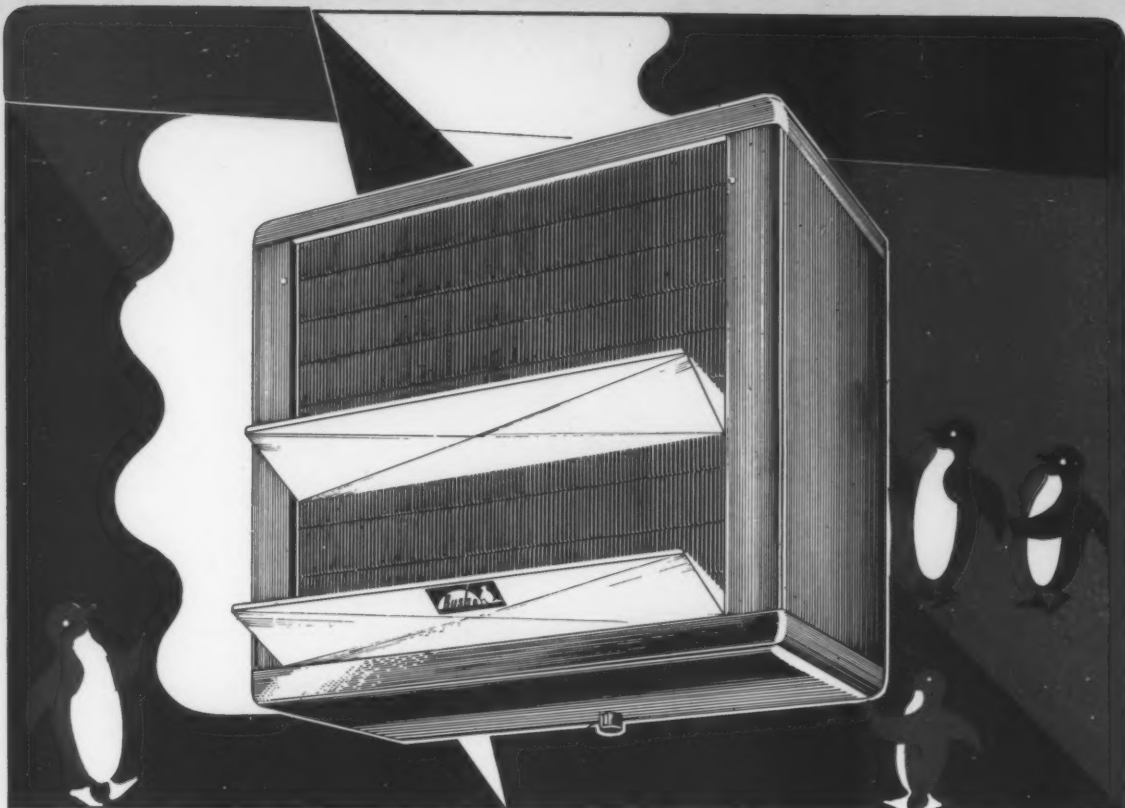
The body and cap of the valve are forged brass to eliminate seepage and to withstand frost action; mounting lugs are forged integrally with the body to provide the ultimate in mounting strength.

The hand-wheel is exceptionally strong, and is so designed that it provides a convenient grip for manual operation.

Valves are furnished in a wide range of styles and sizes.

Order from your jobber.

MUELLER BRASS CO.
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Bush Standard Unit Coolers are designed to meet the rigid requirements of industrial and commercial cooling applications. New models are beautifully streamlined with casings of corrosion resistant steel finished in baked gray enamel. Heat exchangers specially engineered for each model.

There's a size for every application. Capacities from 2500 to 18000 BTU. at 10° T.D. Compact, sturdy and low in price. Bush Standard Unit Coolers are unexcelled for dependable performance. Motor support and mounting channels simplifying installation and servicing.

Bush Standard Unit Coolers have been designed with an unusual margin of safety in coil surface. Can be operated at temperatures and air speeds ideal for this type of unit. Slow speed motors and overlapping kidney type fan blades assure quiet operation and minimum bearing wear. Equipped with adjustable louvers.

Bush Standard Unit Coolers, specially built for use with ammonia refrigerant, also are available. Write for new illustrated Catalog which describes the Standard Unit Cooler . . . and other Bush Heat Transfer Products. For advanced engineering . . . Buy Bush.



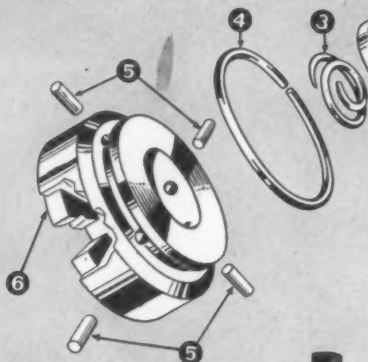
BUSH

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Have This Patented
Rotating Self-Aligning
Stem Disc



Non-Ferrous Alloy
Globe Valve with Sol-
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with Companion Flang-
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Gaskets, as well as in
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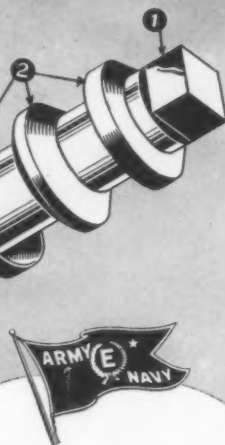


This simple, effective design assures
long, trouble-free service

- ① Valve Stem.
- ② Stem packing set.
- ③ Spring—this provides proper cushion be-
tween valve stem and stem disc making disc
self-aligning and chatterproof.
- ④ Spring Retaining Ring holds steel locking
pins in position.
- ⑤ Steel Locking Pins. These enter side groove
in stem disc and corresponding groove in
valve stem.
- ⑥ Replaceable Rotating Stem Disc has soft,
metal alloy insert which makes contact with
seat in valve body.



• Wing Cap Has Socket to
Engage Valve Stem for
Opening and Closing Valve



YOU can expect longer service through
easier closing action from Henry Wing Cap Valves
as a study of the exploded view of the valve stem
assembly will prove. The rotatable stem disc has an
alloy metal seating surface and is replaceable. This
surface makes instant contact with the valve seat,
thus disc wear is held to a minimum. Further closing
action presses the stem disc onto the seat overcoming
any distortion of the alloy metal.

Henry Wing Cap Valves are back-seating—packing
rings and cones are self nesting requiring a minimum
of compression to establish a seal around valve stem
and stuffing box wall. Developed especially for Freon
and Methyl Chloride, they assure long service life.
Added protection against leaks is provided by the
gasketed joint between the wing cap and the valve
bonnet. Long stem travel and full capacity passages
assure unrestricted flow.

Non-ferrous type valves have solder connections ma-
chined directly in valve body. Semi-steel valves have
screw ends in which solder adapters can be inserted.
Other semi-steel valves are of the flanged globe type
which have rotating forged steel, distortion-proof
companion flanges. Soldering or welding of tubing
or pipe to flange sleeve can be done without trans-
mitting heat to valve seat. Design permits easy re-
moval of valve from line if necessary. Companion
flange can be rotated freely on the sleeve, assuring
quick, easy line up with valve body during installa-
tion. You are invited to write for Henry Catalogs de-
scribing these valves as well as other Henry Products,



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PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR CONDITIONING
AMMONIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS



● Here's the box wrench so many mechanics are talking about. It's a Bonney! The openings are "pull broached" for precision fit. No slipping, no forcing with Bonney Box Wrenches. And their extra thin walls make them easy to work in tight spots. All Bonney Box Wrenches are drop forged for strength and custom-hardened for long wear. Ask your nearby distributor or jobber about them —and the complete line of Bonney Tools.

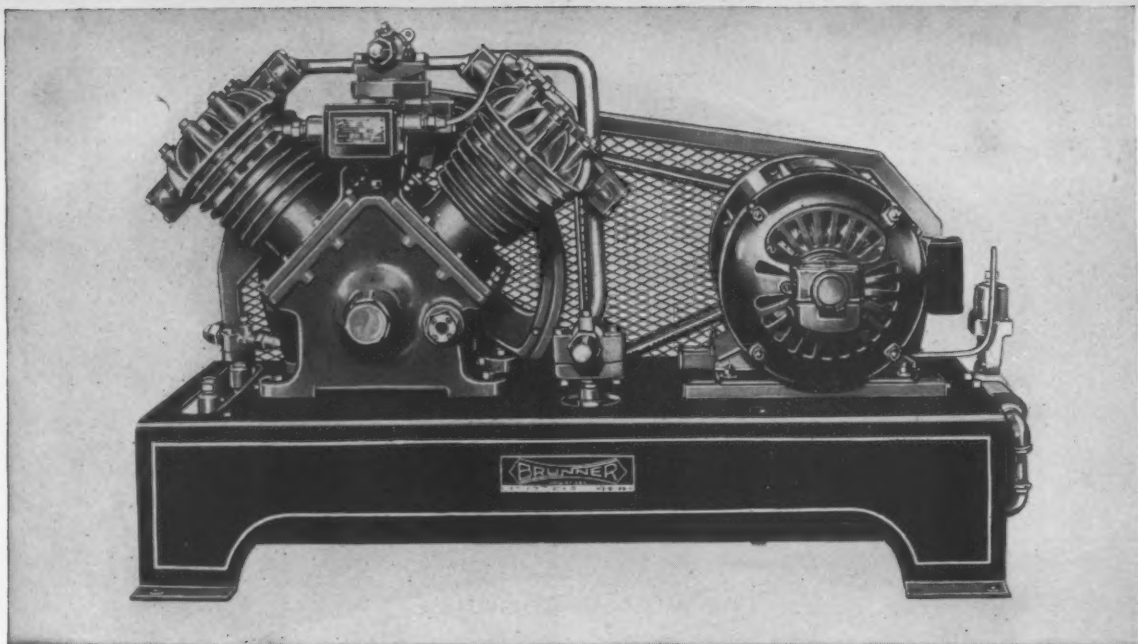
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In Canada: Gray-Bonney Tool Company, Ltd.
St. Clarens & Royce Aves., Toronto

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There are no orphaned BRUNNER Condensing Units

Every existing Brunner Condensing Unit can be kept in service, because of ease of obtaining parts. Replacement parts for every one of them are available. In ordering parts, make sure that you give the serial and model number of the unit as well as the part number. If your jobber is unable to immediately supply a desired part, then have him instruct the factory to ship it to you direct.

It is a fundamental of the Brunner policy to keep Brunner equipment in service. Even should a

complete unit require replacement, the Brunner jobber or distributor is usually able to take care of such emergency requirements. Both he and the factory are not only willing, but anxious to cooperate with you in connection with any servicing or replacement problem. If he cannot answer your questions he will gladly arrange to have a Brunner field service man call upon you.

The factory welcomes direct service inquiries. Brunner depends upon service men to see that their customers get uninterrupted service.



BRUNNER MANUFACTURING COMPANY
UTICA 1, NEW YORK, U. S. A.



Honeywell has the answer! Temperature controls for high or low temperature ranges — Pressure controls, both light and heavy duty — Room type thermostats to meet any specification — Control accessories which provide full flexibility of application. Some Honeywell Refrigeration Controls are equipped with mercury tube switches, some with open contact snap switches depending upon the design application. There is just the right Honeywell Control for every job. Honeywell branches and jobbers are conveniently located in all parts of the country. Factory trained engineers are ready to assist you with your control problems. Call them or write: Minneapolis-Honeywell Regulator Company, 2909 Fourth Avenue South, Minneapolis 8, Minnesota — Manufacturers of the famous Polartron System of Frost Free Refrigeration.

MINNEAPOLIS
Honeywell
 CONTROL SYSTEMS

The Polartron
 System of
 Frost-Free
 Refrigeration



You waste less tube with Anaconda CUP-SEAL* . . .

In buying copper refrigeration tubing you naturally want the clean, bright, dry interior protected by sealed ends. But don't you also want to avoid unnecessary waste of copper? Then use Anaconda CUP-SEALED Tubes.

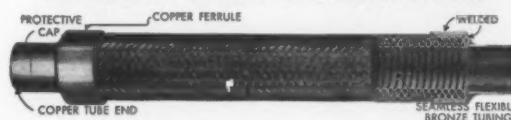
As the above photograph demonstrates, with Anaconda CUP-SEAL the end cut off need be *no longer than the diameter of the tube*. Furthermore, the cup-sealed end has no sharp edges to dent or mar the coil, and it permits feeding the tube through smaller openings than is possible with crimped or flattened ends.

Anaconda Refrigeration Tubes are 99.9% pure copper, deoxidized to increase corrosion resistance, thoroughly and uniformly annealed throughout their entire length. They are easy to bend, and readily flared without cracking. Made in accordance with A.S.T.M. Specification

B68, in standard sizes up to and including $\frac{3}{4}$ " O.D., and stocked by distributors in coils of 25, 50 and 100 feet. Longer lengths available on special order.

*Patent Applied For

AMERICAN VIBRATION ELIMINATORS



American Vibration Eliminators exclude vibration and compensate for thermal expansion in pipe systems. Pressure-tight, safe for conveying costly gases or liquids, such as refrigerants, American Vibration Eliminators are easily installed. For catalog, write American Metal Hose Branch, Waterbury 88, Connecticut.

Buy VICTORY BONDS . . . help assure World Peace



Anaconda Refrigeration Tubes

FRENCH SMALL TUBE BRANCH OF THE AMERICAN BRASS COMPANY

Subsidiary of Anaconda Copper Mining Company—General Offices: Waterbury 88, Connecticut

In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

"DETROIT" VALVES HAVE UNIVERSAL ACCEPTANCE AMONG REFRIGERATION MEN

Refrigeration men everywhere know "Detroit" Expansion and Solenoid Valves. They are all familiar with "Detroit" reliability. They're better valves due to better design—higher quality materials and workmanship.

Drying the Evaporator and Refrigerant Lines with CO₂ Gas and Alcohol

No. 5 of a Series

When an expansion valve freeze-up due to moisture is corrected by applying heat to the valve body, the moisture passes into the evaporator and forms ice. It does not stay in the evaporator permanently as ice, however, but sublimates and continually circulates through the system and will eventually cause another freeze-up at the expansion valve. Therefore, moisture should be REMOVED from the system to insure trouble-free operation.

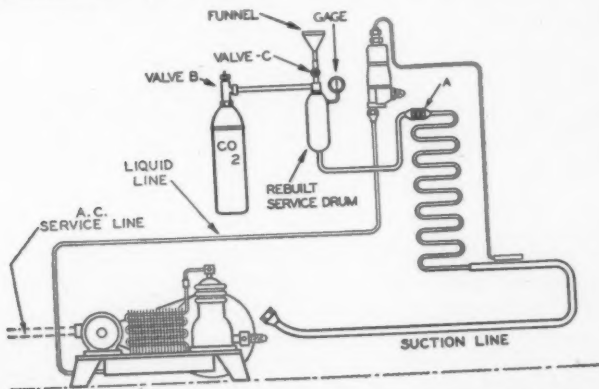
Carbon dioxide—CO₂—in combination with pure methyl alcohol provides a useful means of drying out an evaporator.

refrigerant drum (approximately 4" dia. x 12" long) with welded pipe and gauge connections as shown.

PROCEDURE: 1. Disconnect evaporator at both ends (expansion valve not in circuit) and allow it to warm to room temperature.

2. Make connection "A" to evaporator inlet.

3. With coil outlet connection open to atmosphere, close valve "C", open valve "B" until gauge shows approximately 200 psi and blow coil out thoroughly.



CO₂ has the advantage of being easily obtainable in drums—it is relatively inexpensive, and it is dry. In addition it is practically inert and will not harm the system.

One precaution should be taken. When attaching a new drum of CO₂ to a system, first turn the drum upside down—let it stand for 5 minutes, and then bleed off a little of the gas through the valve. If any moisture happens to be in the drum, it will come out with this gas.

With the equipment shown in the diagram, the following method of drying the evaporator and refrigerant lines is recommended.

NOTE: The rebuilt service drum is made from a standard

4. Close valve "B", open valve "C" and pour one quart of pure methyl alcohol into service drum through funnel.
5. Close valve "C" and repeat step 3. Allow CO₂ to blow through until alcohol is cleared from evaporator and lines.
6. Apply torch to service drum, while CO₂ is flowing, to heat coil and evaporate all the alcohol.
7. Reassemble system immediately, before evaporator cools down. If system is not to be reassembled at once, cap BOTH ends of the evaporator, to prevent moisture from re-entering.
8. Apply permanent dryer when reassembling system.
9. Evacuate system thoroughly with system compressor before opening liquid valves.

DETROIT LUBRICATOR COMPANY Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION



No. 682-3—This reliable valve, like all "DL" solenoids is designed for use with any fluid that will not attack brass. Fitted with three sizes of orifices, 1/8", 3/16" and 1/32".
Nominal capacity—liquid line
1/8" orifice 1-1/2 tons from 2-2/3 tons methyl
3/16" orifice 3 tons from 6-1/2 tons methyl
1/32" orifice 5-1/4 tons from 8-2/3 tons methyl
2" female N.P.T. connections.



No. 686—The No. 686 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 1-1/4 psi to operate the piston when used with refrigerants, 3 psi air water. It is made with 2 sizes of orifices, 1/2" and 3/8". Available threaded or flanged for various size coil pipes.
Nominal capacity—liquid line
1/2" orifice 11 tons from 23 tons methyl
3/8" orifice 17 tons from 34 tons methyl



No. 672—Thermostatic Expansion Valve. For many years the standard of the refrigeration industry. Nominal capacity—1-1/2 tons on Freon, 2-1 tons on methyl.



No. 673—Thermostatic Expansion Valve is of the adjustable type. Rated at 1/2 ton Freon, 9 ton methyl. Inlet 1/4" or 3/8" SAE. Outlet 1/4" female, 1/2" or 1/2" SAE. Regularly supplied with strainer at inlet.

Reprints of these articles, punched in to your service book, available on request. Write for your copy.

DETROIT LUBRICATOR COMPANY



General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

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Again, Revere is ready



Revere metals are impartial. They don't care whether they are used for battleships or baby carriages, for rockets or refrigerators, for primers or piping. That is why there are no difficult reconversion problems at Revere to slow down production of copper, brass, bronze, aluminum, magnesium, steel.

We are ready *now* to fill industry's peacetime needs.

Revere hopes that, in the conflict just ended, what we won was the gigantic opening battle for better living. To fight *this* war our nation needs materials and the products of industry on a scale even greater than that which won military victory.

One inevitable result of Revere's war effort is that not only our ability to produce, but our ability to give service, have been expanded many times. Revere research has probed further and further. Revere Technical Advisors are armed with greater knowledge and experience. New methods and new machines may save precious time or cut all-important cost.

With all these enhanced resources we are ready now to serve man's creative spirit and, by supplying industry in abundance, to help make of life the rich, joyous thing it can be.

... NOW!



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PROTECT FOOD

AGAINST SPOILAGE AND WASTE



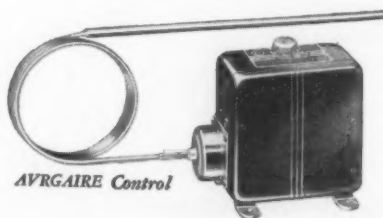
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Designed for commercial "above-freezing" applications, the low-cost, highly efficient AVRGAIRE control provides food supplies with *better protection against spoilage and waste.*

PENN AVRGAIRE incorporates a single-type temperature bulb which is scientifically applied so that it is influenced by the *average temperature of both coil and air.* Consequently AVRGAIRE assures extremely close regulation of box temperature without irregular short-cycling of the compressor.

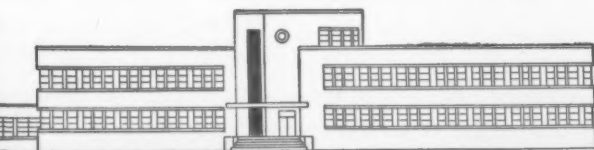
Furthermore, this control automatically defrosts the coil on each operating cycle ... when the box load is normal. However, let the box be loaded with warm produce and extra cooling capacity be required ... and defrosting will be delayed automatically. In addition, PENN AVRGAIRE maintains uniform humidity and thus reduces dehydration and "sliming" losses to a minimum.

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AVRGAIRE Control

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AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

RTU

News • Laws • Trends

● **All-Industry Show.** Dates for the All-Industry Refrigeration and Air Conditioning Exhibition have been set. The meeting, to be sponsored by Rema, will be held at Cleveland's Public Auditorium from *Monday, Oct. 28, 1946, to Thursday, Oct. 31*. Convention headquarters for exhibitors will be in the Hotel Cleveland. Invitations to cooperate in the show already have been sent to Refrigeration Supply Jobbers Association and Refrigeration Service Engineers Society.

● **Monitor Cooling Source.** Most recent issue of *Chrysler Airtemp News* in announcing the resignation of P. B. Zimmerman to become executive vice president of Monitor Equipment Corp., reveals that Chrysler Airtemp will supply the air conditioning units to be merchandised by Monitor distributors and dealers. Other suppliers of equipment to Monitor equipment won't be announced before deliveries to outlets are begun; this isn't expected to be before late this month or early in November.

● **Locker Operators Mean Business.** Locker plant operators aren't kidding about selling home freezers when they're available—members of National Frozen Food Locker Association have placed orders for more than 10,000 units at a recent advance showing of the unit selected for merchandising by an association committee which has been studying various models for the past several months. The unit chosen for merchandising through locker operators is 4 cu. ft. in size and retails for under \$200. Members had to order at least 100 units to get in on the proposition.

● **The Buffalo Market.** Refrigerators lead the potential market in the Buffalo, N. Y. area, according to a survey recently announced by Buffalo Niagara Electric Corp. The area, now 69.9% saturated, has a potential of 23.2% or 23,700 units, for a sales volume of \$6,844,500. In the home freezer field, potential market is set at 7.1% or 11,900 units, for a dollar volume of \$2,380,000. Only refrigerators and conventional-type washers lead the home freezer market in potential dollar value, the survey discloses.

● **Construction Order Relaxed.** Under the latest relaxation of Order L-41, the general construction order, alterations and repair work not involving exterior additions are allowed, without regard to the type of work or its cost. Formerly alterations were subject to the same restrictions as new construction. Under the new ruling,

dealers can get their places of business in shape for full-scale merchandising, as long as only interior changes are involved.

● **Atomic Power's Use.** The most probable utilization of nuclear energy, basis for the atomic bomb, is as a source of heat, say officials of General Electric Co. in answer to many questions from industry and the general public about the potentialities of atomic power. Concerning the possible use of nuclear energy as a source of power to heat and light homes and buildings, operate factories, and propel various types of equipment, G-E scientists say that several prospective uses of this power will become technically possible, but that it is too early to predict whether such uses will be economically practical.

● **Time Sales Still Controlled.** Regulation W, through which the Federal Reserve System has imposed restrictions on installment selling, will not be dropped despite the ending of the war with Japan. The regulation was designed to curb inflation during the war, but since the danger of inflation will be just as great, possibly greater, in the immediate postwar period, the ruling will be continued in effect until there is no likelihood of soaring prices.

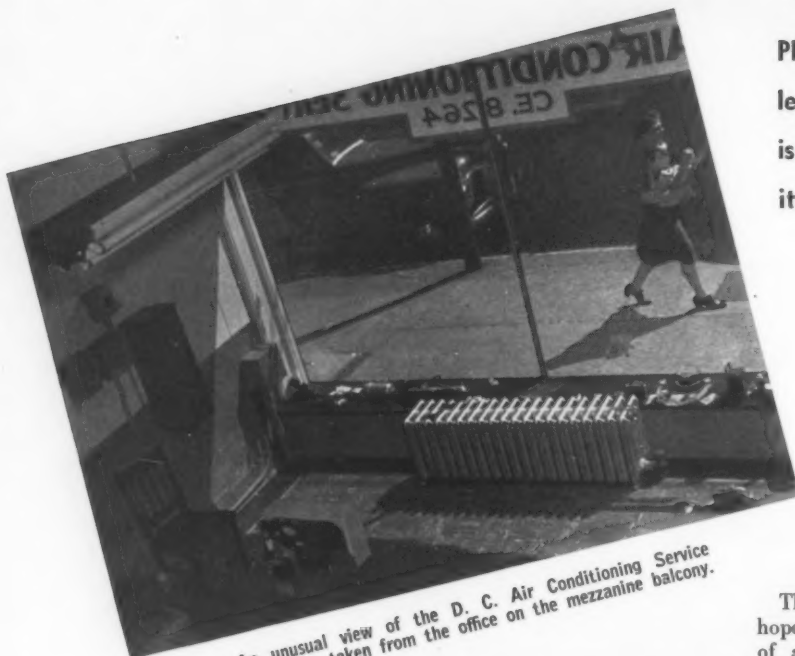
● **Rema Meetings Set.** Refrigeration Equipment Manufacturers Association has scheduled meetings for this fall and next spring. Dates for the fall meeting, to be held at the Homestead, Hot Springs, Va., are Nov. 7 to 9 inclusive; for the spring meeting, to be held at Hotel Stevens, Chicago, March 4 to March 7, 1946. The spring meeting will take the form of one of Rema's earlier meetings, and will be joint meeting with jobbers and service engineers. Conference booths will be set up for firms desiring them, for private sessions on sales and installation problems.

● **Service Council Funds.** The \$680.63 remaining in the treasury of National Refrigeration Service Council at the time it was disbanded has been turned over to Rema, for use in that organization's public relations program. It is in accord with a motion approved by the Council's directors, who felt that in this way more benefits would accrue to all members of the refrigeration industry.

● **No More Ratings.** At least, no more for repair shops who operated under CMP-9 and 9A, Order P-126, and CMP-5 and 5A for their own maintenance and repair materials. All of these regulations expired as of September 30, 1945. These ratings may no longer be extended, and orders rated under them calling for after-September 30 delivery also are automatically changed to an "unrated" status. It will now be first come, first served for repair men and others on repair materials, including the hard-to-get items—fractional motors, condensing units, and certain other critical refrigeration parts.

The revised priorities system provides for AAA for emergencies, MM for the Army and Navy and other military agencies, and CC to break "bottlenecks" of critical items. The CC rating is not extendable, either for production materials to make the item or for replacement of the item in the supplier's inventory.

The Inside Story



An unusual view of the D. C. Air Conditioning Service showroom, taken from the office on the mezzanine balcony.

IF YOU want "the inside story" of how to succeed in the business of air conditioning and industrial refrigeration installation and maintenance, keep your eyes and ears open and your mouth closed—and see that all the men who represent your organization learn to do likewise.

That's the advice of Dennis Coad, who operates the D. C. Air Conditioning Service Co., four-year-old St. Louis air conditioning maintenance organization which has grown up into the responsibility of taking care of the requirements of some 376 commercial and industrial concerns in the Mound City territory.

Mr. Coad started in business for

Dennis Coad, head of D. C. Air Conditioning, and his efficient secretary, Mrs. Coad. The firm services 376 cooling accounts.

himself in July, 1941, after some four years with Sears, Piou & Co., Carrier air conditioning and commercial distributor. He started as a one-man operation, but now his organization comprises, in addition to

Plenty of know-how plus the lesson of "the wise old owl" is keeping this firm busy and its customers coming back

himself and Mrs. Coad, who serves as his secretary, eight air conditioning industrial refrigeration service men, one electrician, a steamfitter, and one sales representative.

The sales representative, Mr. Coad hopes, will be merely the forerunner of a considerably larger force engaged in sales and promotional work for his company. Like many another dealer who began as a "service only" company, he has been quick to recognize the opportunities which an organization such as his can open up in the merchandising side of air condi-



OF A SUCCESSFUL AIR CONDITIONING CONTRACTOR

tioning and industrial refrigeration work—and he is planning to make the most of it.

So far, he hasn't settled on a line of air conditioning or refrigeration equipment, although he has several of them in mind and is open to offers by manufacturers in these fields. But he has added a distributorship for General Television & Radio intercommunication and radio equipment, and already has lined up several dealers who are r'aring to sell the equipment as soon as it can be had—which won't happen, in quantity, before the end of the year. But, as Mr. Coad sees it, this type of equipment will develop into more or less of a door-opener for larger equipment . . . air conditioning and engineered commercial equipment, both sales and service-wise.

But to get back to Mr. Coad's theory of how to do air conditioning service business and make it stick . . . he says he took his business motto from his father, who used to quote him the "wise old owl" rhyme. Remember it? It goes:

*A wise old owl sat in an oak,
The more he saw, the less he spoke;*

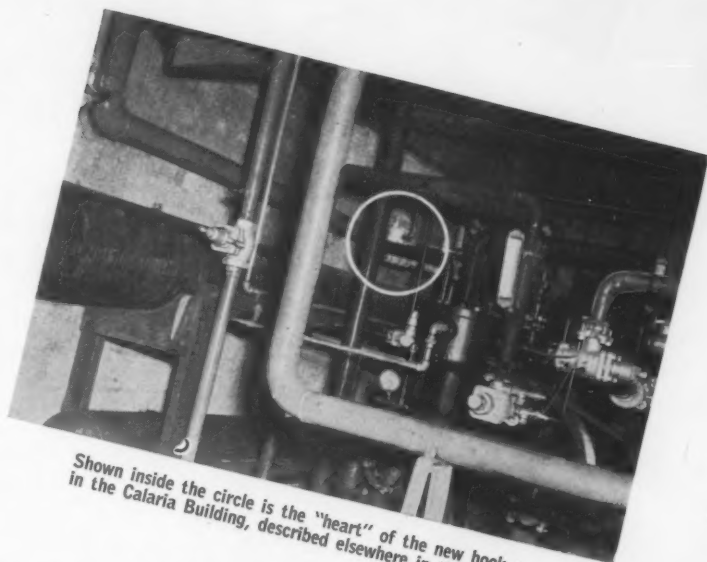
*The less he spoke, the more he heard.
Why can't we be like that old bird?*

This principle is drummed into each of D. C. Air Conditioning Service Co.'s men by the boss himself, who has learned by experience that it's a method that pays off in better jobs and more satisfied customers. One of Mr. Coad's proudest points is that, of the 376 service contracts

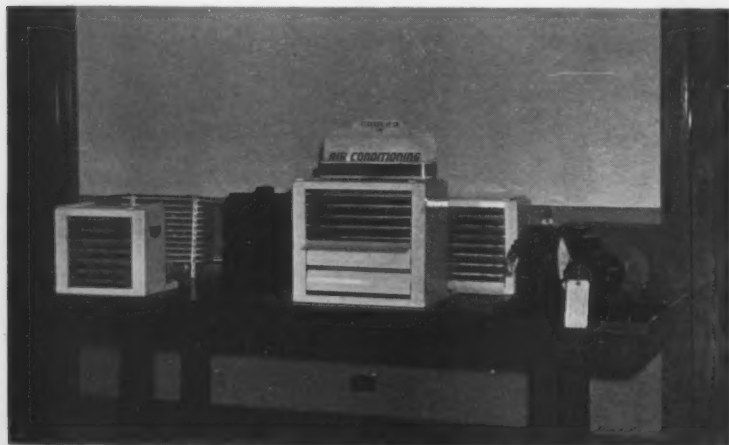
he now handles, not a single one was solicited by him. All of them came his way because of the reputation his firm had established for doing first-class work in a first-class manner.

That's where the "eyes and ears open, mouth closed" practice really pays off. Mr. Coad's men are cautioned to look every job over for themselves, and to make up their own minds as to what needs to be done. Taking the customer's word for what's wrong is liable to lead you into plenty of blind alleys—he may think he knows, but after all, he's only an observer, an untrained one at that. Listen to him . . . yes, and take his suggestions courteously—but don't act on them until after you've inspected the job thoroughly yourself. You're the doctor—and if you fix the job right, the customer will be satisfied, no matter whether you fol-

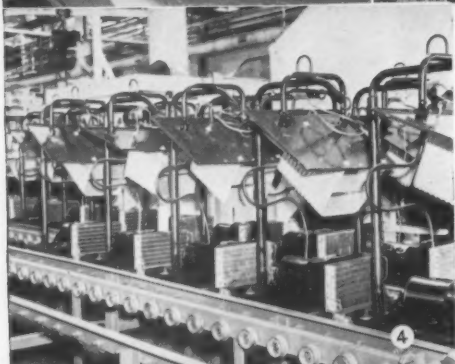
Continued on page 45



Shown inside the circle is the "heart" of the new hook-up in the Calaria Building, described elsewhere in this article.



Another view of the company's display floor, not so well filled now as it will be later, when new lines are added.



THEY'RE OFF!

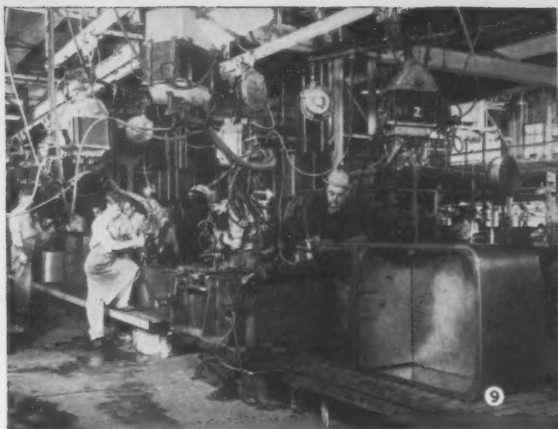
Assembly-line production of household electric refrigerators is again under way. Here are some typical scenes from two major manufacturers



FOR the first time since April, 1942, household refrigerators are again rolling in volume production from the lines of major industry manufacturers. On these pages are shown typical scenes from the plants of two companies—General Electric and Kelvinator. From them, you'll be able to get an idea of some of the processes through which a refrigerator must go before it finally shows up for sale on your display floor.

Following the pictures by number above:

- (1) This massive punch press stamps out G-E household refrigerator doors from sheet steel.
- (2) Parts for new G-E refrigerators stream into the Bonderizing booth. As they enter the booth, they are sprayed with hot water.
- (3) G-E evaporator units are raised from a boiling-water bath prior to pickling them in the acid bath of the vat in lower left hand corner.



(4) Complete G-E pump assemblies pass along a conveyor prior to installation in refrigerator cabinets.

(5) Performing an enamel dipping operation on the General-Electric production line.

(6) The mile-long conveyor that carries refrigerator parts through G-E's Erie (Pa.) plant snakes through the painting section, where a worker applies a coat of white paint to a cabinet exterior.

(7) Installing a refrigerating unit in a 7 cu. ft. G-E refrigerator cabinet.

(8) Completing final inspection of the new household refrigerators at G-E's Erie plant. These are 7 cu. ft. units.

To boost its refrigerator production, Kelvinator has moved its entire operation to Grand Rapids (Mich.). Hereafter, refrigerator units, made in Detroit, will be shipped to Grand Rapids for assembly; formerly it was the other way 'round. It is estimated that this change will increase final assembly capacity by about 70 per cent.

(9) Here are first refrigerator shells coming off the Kelvinator sub-assembly lines at Grand Rapids.

(10) Freezer shelves for 1946 Kelvinators and Leonards begin to roll out in quantity.

(11) Part of the Kelvinator-Leonard evaporator is being spot welded by this machine.

(12) Results of construction improvements are being examined by (left to right) O. L. Currier, Grand Rapids, manager; C. T. Lawson, vice president in charge of sales; L. A. Philipp, chief engineer; and R. A. DeVlieg, vice president in charge of manufacturing.

(13) Evaporators take on a familiar appearance as they move rapidly along the Kelvinator assembly lines.





A mechanic checks some of the Diesel generating sets for refrigerating machinery at a Navy advance Pacific base.

By George W. Grupp
Navy War Correspondent

Beef and



Shown here is a block of freezers from which the Navy gets part of its vast food requirements. (U.S. Navy photos).

The Navy moves on its stomach, too. Here is a Navy war correspondent's report on the vast amounts of refrigeration required to supply ships and shore bases with an adequate, well-balanced "three-squares"

THE days of corned beef, hardtack and molasses are past. The United States Navy of today supplies her men with a balanced diet of the best quality of food because of her refrigeration facilities on fighting ships, her refrigerated supply ships, and her refrigerated storage plants at land bases on continental United States and on certain islands of the Pacific Ocean.

To feed the floating men of the United States Navy on Pacific waters of today is a tremendous task, for they consume 7,700,000 pounds of meats, dairy products, poultry, and fresh fruits and vegetables per day, or 231,000,000 pounds per months, or 2,772,000,000 pounds per year. In

Beer

other words the floating personnel of the United States Pacific Fleet consumes 1,386,000 short tons of refrigerated foodstuffs per year.

To have the necessary quantities of foodstuffs constantly available requires a large amount of refrigeration equipment for "floating ice boxes" and cold storage facilities; and it requires a considerable amount of careful planning by the United States Navy's Supply Corps to have on hand at all times enough food to keep the men happy and physically fit, for as the Duke of Marlborough said: "No soldier can fight unless he is properly fed on beef and beer," or as Shakespeare put it: "Give them great meals of beef and iron and steel, they will eat like wolves and fight like devils."

Since the Navy Supply Corps recognizes this philosophy, it buys only the best foodstuffs and keeps the reefers busy carrying eatables from the West Coast of the United States to the Pacific areas.

The small reefers of 250 tons cargo capacity, used for local service, are usually divided into ten refrigerated compartments of 25 tons each. On the other hand, each of the large trans-oceanic reefers usually carries about 4,000 tons of fresh and frozen foodstuffs, (800 units of 5 tons each), which is enough to feed 2,300,000 men for only one day.

This makes it clear that a large number of reefers are required to keep the Navy's men properly supplied with food in the Pacific.

But this is only one of the uses for refrigeration machinery by the United States Pacific Fleet since such equipment is also used to preserve medical supplies such as plasma and penicillin, to cool drinking water, to make ice for various purposes, and to make ice cream.

To provide for adequate floating refrigeration facilities is the task of the Navy's Bureau of Ships, but the problem of supplying sufficient land refrigeration facilities is the task of the Navy's Bureau of Yards and Docks.

Each bureau in making the selection, size, and type of refrigeration machinery considers (a) the kind and amount of foodstuffs, cooled water, ice, and ice cream which must be handled in a given place and in an available amount of space, (b) the prevailing outside temperature of, and the required inside temperature needed for, a particular locality in the Pacific or specific type of vessel, (c) the desired size and type of room, unit, and number of compartments in a unit, (d) the kind and thickness of insulation required to meet specific conditions, (e) the anticipated number of air changes per day, and (f) the most efficient and economical type of machinery for the desired needs and uses.

Since all foodstuffs are perishable and each kind has a different cold storage life—grapefruits from 8 to 10 weeks, onions from 5 to 6 months; since refrigeration merely retards de-

terioration and does not correct spoilage due to pre-storage injury; and since foodstuffs high in moisture content will evaporate or wither in a refrigeration atmosphere which is too dry and give off a musty odor if the humidity is excessive, the Navy Supply Corps must be constantly on the alert in several directions. First, it must see to it that the foodstuffs are properly prepared and correctly packed before they are placed in refrigeration. Second, it must make certain that all foodstuffs are carefully handled and properly stowed in the refrigeration facilities. And third, it must train its cold storage provisions officers and men to attain effective odor control, and to make sure that each class of foodstuff is placed in the proper refrigeration atmosphere with the right amount of humidity and correct temperature.

One of the Navy's biggest refrigeration problems is that of making the smallest amount of refrigerated capacity be of service to the greatest possible number of men, for the reason that some Navy galleys are feeding, on a stagger system, several times their rated capacity.

To attain the greatest degree of efficiency and the largest amount of diversified utility of refrigerated space on fighting ships, most vessels are equipped with facilities which provide independent compartments with individual temperatures for different classes of foodstuffs.

Besides the marine general refrigeration systems on reefers the Navy uses aboard ships a number of different types of refrigeration equipment such as water coolers, ice cream making machines, frozen food cabinets and reach-in refrigerators.

On shore the Navy has cold storage facilities of various kinds and sizes. At advance bases in the Pacific blocks of six freeze units of 4050 cubic feet capacity, and ten freeze units of 6800 cubic feet capacity, are housed in open wooden structures.

Continued on page 59

Does your business have

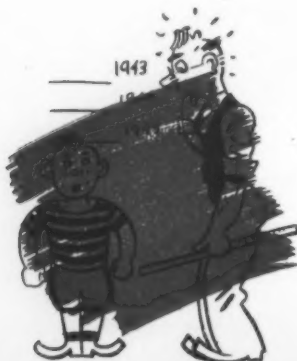
a hole in its pocket?

"MY SHOP was busier this month than last," said Bill Jackson, an eastern refrigeration man, "yet my profit-and-loss statement shows a smaller profit." He had checked all figures, Bill said, and although his ex-



penses totaled about the same as in the previous period, yet here he was with substantially less profit. After investigation, the riddle was easily solved. His error was in failing to figure for work-in-progress on jobs put into work in one fiscal period and not completed until another fiscal period, a common fallacy. Often, such hold-over jobs run into substantial sums.

There are two hazards in disre-



By Fred Merish

garding work-in-progress or figuring it inaccurately:

1. Comparative analysis, the cornerstone of cost control, is thrown out of focus.

2. Estimates may be short-costed during a current period, causing considerable loss.

If work-in-progress is not considered at the time a profit-and-loss statement is prepared, net profit will be too low. From period to period, net profit will equalize itself, whether work-in-progress is considered or not, and your bankroll won't suffer, but

* * *

Are you short-changing your profit possibilities because you overlook work in progress? It can cost you plenty.

* * *

you cannot get the right perspective of operating efficiency. In other words, your comparative analysis will be off the beam and you won't be able to exercise proper cost control. In this seller's market, it is easy to get the business but not so easy to make a profit on that business unless costs are policed continually. To control costs adequately, you must know your profit and take into consideration all factors that have a bearing on it.

Work-in-progress usually is recorded in one of four ways:

1. You credit income with the sale when the job goes into work, which reverses the result experienced when work-in-progress is not considered at all. This inflates the profit for the



first period, deflates it in the next. Both methods distort comparative analysis.

2. You "guesstimate". Guesswork is always bad business.

3. You record only the cost covering work done in the period in which the work is done, this cost including all materials withdrawn from stock to the date of the statement, all labor done on the job to that date and the overhead pro-rated in ratio to the labor-hours worked.

4. You record job costs to the proper period and a pro-rata share of the net profit. In this case, materials and labor are computed to the date

Continued on page 52



FROM THE REFRIGERATION SERVICE CONTRACTOR'S ANGLE

Mr. WARREN W. FARR,
of Refrigeration Maintenance Corporation, Cleveland, says—

**"A QUALITY MATERIAL
ALWAYS HELPS OUR
BUSINESS FORGE AHEAD!"**



"A business like ours rises and falls on the skill of our men and the type of materials we use. The removal of moisture is only half of our work, because moisture removal is only half of the job . . . other elements must be removed, too. And there is where Davison's Silica Gel excels. We tried other drying agents, but after standardizing on Davison's Silica Gel, its many additional advantages over other drying agents helped our business forge ahead."

ORDER DAVISON'S SILICA GEL FROM YOUR JOBBER IN
FACTORY-CHARGED DEHYDRATORS AND FOR REFILLING

GIVES YOU—1. Maximum capacity for moisture prevents freeze-ups . . . is not affected by oil; 2. Instant action; 3. Removal of Acids, Corrosive compounds and other impurities; 4. Freedom from Channelling of Refrigerant; 5. Safety—will not attack metals or alloys.



THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry



BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON'S SILICA GEL: CANADIAN INDUSTRIES LIMITED, General Chemicals Division

LOOK

By Jack Warren

IN an article in the August issue of THE REFRIGERATION INDUSTRY, we discussed the past, present, and potential value of the independent service man to the refrigeration and appliance industry.

Now let's review the most important items which must be investigated, arranged, established, and organized by the independent before he can undertake to assume the responsibility of servicing a line of appliances in a satisfactory, workmanlike manner.

If the independent is to take over the service obligations of a dealer, distributor, or manufacturer in his community, he should, first of all, make a careful and thorough survey of his present servicing operation. Here are the major points that such a self-analysis ought to cover:

1. Inventory

An appraisal of the amount and value of service parts inventory must be made. Some appliance lines require a large inventory to service a range of models, while other lines, as a result of good engineering practice and careful redesign, cover the same requirement with a relatively small inventory due to the interchangeability of parts.

It is necessary, therefore, to determine the amount of inventory necessary to service the line for all periods of the year. The amount of floor space necessary to stock this inventory, as well as the number of stock bins

necessary to store the service parts, must be established.

Floor area and stock bins are an absolute necessity, since inadequate and improper storage leads to poor housekeeping with a fast depreciation of inventory value.

2. Shop Tools and Equipment

An inspection should be made of the shop tools and equipment necessary to service the product. Some manufacturers have established policies which make it profitable to perform many service operations in your own shop rather than return the inoperable part to the factory for repair or replacement.

3. Manpower

The overall manpower requirements for both inside stock and shop men as well as outside service men must be estimated. The type of man-

power required should be established; namely, skilled, semi-skilled, or new trainees processed through a service training program. If the present service department is operating under the jurisdiction of a labor union, contact the business agent or officers of the union to ascertain if rate increases are to be applied for in the near future. It is also important to understand union policy.

Refrigeration service independents usually employ the highest paid skilled men on their commercial and air conditioning work. If the service work on the appliance line is of a semi-skilled nature it will be necessary to establish two separate rate classifications. The union should be apprized of these facts.

4. Telephone Equipment

An analysis of the present telephone facilities will establish the



Before You Weep!

Your maintenance set-up may suit you as it is, but how would it look to a manufacturer with a franchise to place? See yourself as he does

amount of new telephone equipment which must be available and installed before the transfer of service operations. Additional space for more trunk lines should be allowed, and enough unlisted trunk lines should be set aside for the exclusive use of your outside service men. Any delay on their part in contacting your dispatcher will result in high labor costs and inefficient operation.

5. Service Records and Policy

All manufacturers require a number of service records to be maintained in order to support their warranty exchanges and allowances. These records require filing cabinets for storage and office help, and equipment to maintain them. The space required and employees necessary should be determined.

The service policy of the manufacturer will fix the office and shop routine required to effect the prompt

handling of returned parts, replacements, orders, invoices, credits, transportation allowances, labor and policy adjustments. *The manufacturer's policy is the rule and guide to all transactions.* The independent should be doubly sure he understands it and agrees with its terms.

6. Service Prices

An audit should be made of the service invoices, hourly labor rates, and selling prices to the users, to be sure they are fair and equitable, and that they also show a normal profit

Continued on page 68

HOW DO YOU STACK UP?

Here is a check-list of the minimum requirements that a manufacturer or distributor would insist upon before giving your company consideration for a franchise to take care of his servicing and installation requirements in your local territory. Try it on for size!

CREDIT

- Adequate and balanced inventory ☐
- Adequate shop tools and facilities ☐
- Stable financial condition ☐
- Skilled manpower on hand, trainee program going. ☐
- Adequate communications arrangement; advertising and promotion planned. ☐
- Clear and adequate financial and business records... ☐
- Fair and equitable charges to customers ☐

DEBIT

- Poor physical inventory set-up ☐
- Skimpy shop equipment; layout poorly planned.. ☐
- Unestablished credit..... ☐
- No planned manpower set-up ☐
- Uncontrolled or poorly controlled service contacts ☐
- Office and servicing routines not fixed ☐
- Haphazard, hit-skip service pricing methods ☐

Remember: "If you can't honestly give yourself a check-mark on the "credit" side of all these points, you're not too good a bet from the viewpoint of a manufacturer or distributor.

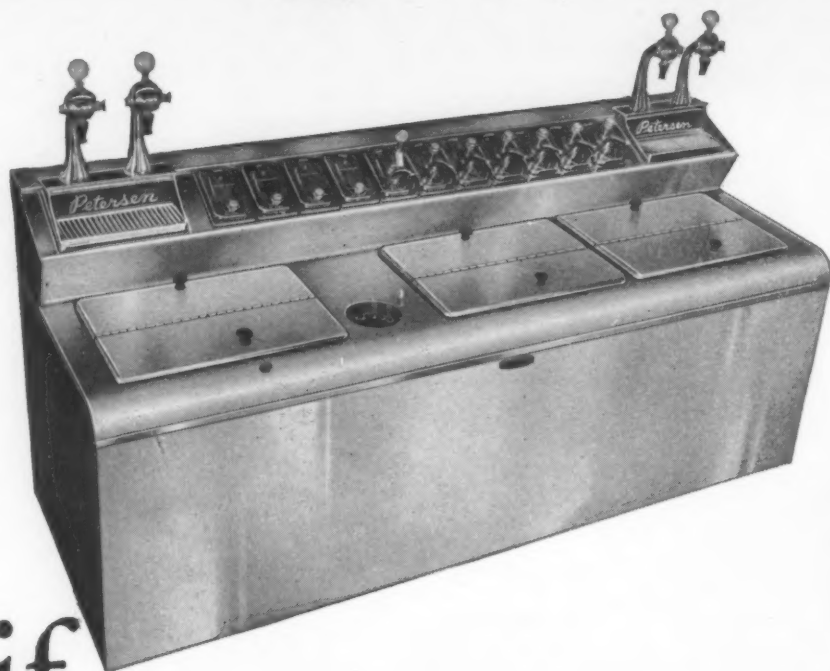


HOW MANY OF YOUR



CUSTOMERS WANT

— SODA FOUNTAINS? ...



if

you supply the food field, you already know the demand is huge for Petersen Cold Control soda fountains, luncheonette and low-temperature equipment. Demand for *Petersen* equipment is due to our reputation for superior products since 1920.

Here at Petersen Show Case & Fixture Co. we put our best engineering skill, the best of materials and our thorough knowledge of just what is wanted into *every* piece of equipment made. The results of this policy, we are proud to say, have built us an enviable reputation.

Now, once more, you can offer your customers the maximum in economical efficiency . . . you can offer them Petersen Equipment. Descriptive literature of our new post-war models is now available to dealers. Write today for your copy.

MANY GOOD TERRITORIES ARE
STILL OPEN. BONA-FIDE DEALER
INQUIRIES ARE REQUESTED

Makers of

- Master Soda Fountains
- Champion Soda Fountains
- Challenger Bobtails
- Luncheonette and Related Equipment



INSTITUTIONAL EQUIPMENT DIVISION OF
PETERSEN SHOW CASE & FIXTURE COMPANY
5700 SOUTH SAN PEDRO STREET · LOS ANGELES 11, CALIFORNIA · PHONE ADams 3261

Pay as you go...

A meter-based merchandising program like this one keeps both users and salesmen happy

WANT to set up a steady volume of sales—and profits—in package-type commercial refrigeration equipment? Then run your merchandising program "by the clock." That has been the experience of W. T. Finney, of Finney Brothers Refrigeration Co., Indianapolis, who has just returned to the business front after a two-year hitch in Uncle Sam's armed forces.

The "clock" that has kept the company's sales volume ticking steadily in the past, and that will continue to be its stand-by in the future, is the coin-meter method of selling—putting commercial equipment on a straight-out pay-as-it-goes basis as far as the customers are concerned.

Meter-plan selling, Mr. Finney has found, works equally well with all types of commercial installations, and is one sure way in which a moderate-size organization can carry its own financing program right along with its sales. A former finance company man, Mr. Finney thoroughly understands the importance of friendly credit relations in helping



Farm Freezers figure importantly in future sales plans of Finney Bros. Refrigeration Co. Here Mr. Finney inspects a 16-ft. model, his only "sample."

to sell more products. He says he hasn't found anything that can beat the meter plan for keeping collections current and customers satisfied, at the same time.

Right now, of course, the problem isn't so much one of selling equipment as it is getting some equipment to sell; but that condition will soon pass, and Mr. Finney already has his sights set on the all-out selling season ahead. To his former commercial lines, he has added farm freezers for merchandising to rural prospects as soon as units are available in quantities.

He's not one who believes in combining selling and servicing. His sales force will be for selling only, and if he gets the type of men he

prefers, they'll be older men—45 and over—experience has shown him that these men work better with a minimum of supervision and that they encourage confidence on the customer's part. Mr. Finney's experience with his salesmen in the past has been good—because he keeps his promises to them. What discourages most salesmen, Mr. Finney believes, is the time they have to wait after closing a deal before they get their money out of it. With the meter selling plan, men can be paid off when the sale is made—they can quit worrying about the cash they've got coming and concentrate instead on the money that's ahead. That plan has worked for him in the past and he sees no reason why

Continued on page 47

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Continued on page 47



Sterling Smith has announced his resignation as manager of the refrigeration division of Mills Industries, Inc., Chicago. Before becoming associated with Mills a year ago, Mr. Smith for nearly three years was chief of the refrigeration and air conditioning sections of the War Production Board, and prior to that was with Nash-Kelvinator.



Mr. Smith, who has been prominent in the affairs of the Refrigeration Equipment Manufacturers Association, will continue in the industry and will disclose his future plans following a vacation.

Charles V. Gary has been returned to inactive duty in the U. S. Naval Reserve, and has resumed his position as general manager of Henry Valve Co., Chicago. He had served as a lieutenant in the U. S. N. R. since 1942.

Robert W. Morgan has been appointed chief engineer of Fedders Mfg. Co., Buffalo, N. Y. His previous experience covers a broad variety of products in the heat transfer and general manufacturing fields.

A. C. Freimann has been named assistant commercial sales manager of Frigidaire Division, General Motors Corp. Mr. Freimann formerly headed the Frigidaire product development and application department which, for the past few years, had been exclusively engaged in contact work with the Army, Navy and other war agencies to determine the refrigeration requirements of these agencies.

W. A. Lavoie has been named plant engineer at Airtemp Division, Chrysler Corp., for both the Dayton and Indianapolis plants. Lavoie

comes to Airtemp from the Anniston (Ala.) Ordnance Depot, one of the largest in the world, where he was general plant engineer for almost two years.

Henry A. Miserochi has been appointed manager of apartment house sales for the New York appliance distributing branch of General Electric Co.

Patrick Deluhery has been named southwestern manager for all Admiral products. Mr. Deluhery will eventually make his headquarters in Kansas City Missouri. He joined Admiral last year as assistant branch manager of the Chicago office. Previous to that he was district manager of the Oldsmobile division of General Motors, and was also advertising manager of the Milwaukee Sentinel.



Russell Maguire has been elected president and general manager of Alco Valve Co., St. Louis, to succeed A. B. Schellenberg, who recently resigned. Mr. Maguire, who holds controlling interest in Alco, has been active in the management of the company since 1937, during which time the company has expanded from 100 workers to more than 500 employees.

As part of his new program for Alco, Mr. Maguire has announced his intention to increase the capital of the company.

Harry F. Bell and **Carl L. Olin** have been named eastern and western sales manager, respectively, for the electric refrigeration division of Servel, Inc.

Mr. Bell, who has been with Servel since 1936, will handle all field contacts east of the Illinois-Indiana line, and Mr. Olin, with Servel since 1926,

will handle all contacts from that point west.

The appointments were made in connection with an expansion of Servel's electric refrigeration program.

S. T. Warrington has resigned as senior agricultural economist, U. S. Department of Agriculture, and moved to Houston, Tex., where he expects to organize the Warrington Co., to act as counsel on frozen food problems, especially those concerned with engineering and construction. He also will be associated with Consolidated Frozen Foods, Houston, handling frozen food lockers.

H. E. Wood has been appointed assistant manager of the export division of Worthington Pump & Machinery Corp., in charge of the air conditioning and refrigeration section.

B. F. Tucker has been named sales manager and **J. G. Thornburgh** commercial and service manager of Refrigerating Equipment Co., Indianapolis Frigidaire distributor. Mr. Tucker has been with the organization since 1926, and Mr. Thornburgh since 1924.

Richard J. Levi has been named sales manager for Fay-San Distributors, Inc., Admiral distributor in Buffalo, N. Y.

C. E. Whipps, former manager of the order department at Ranco

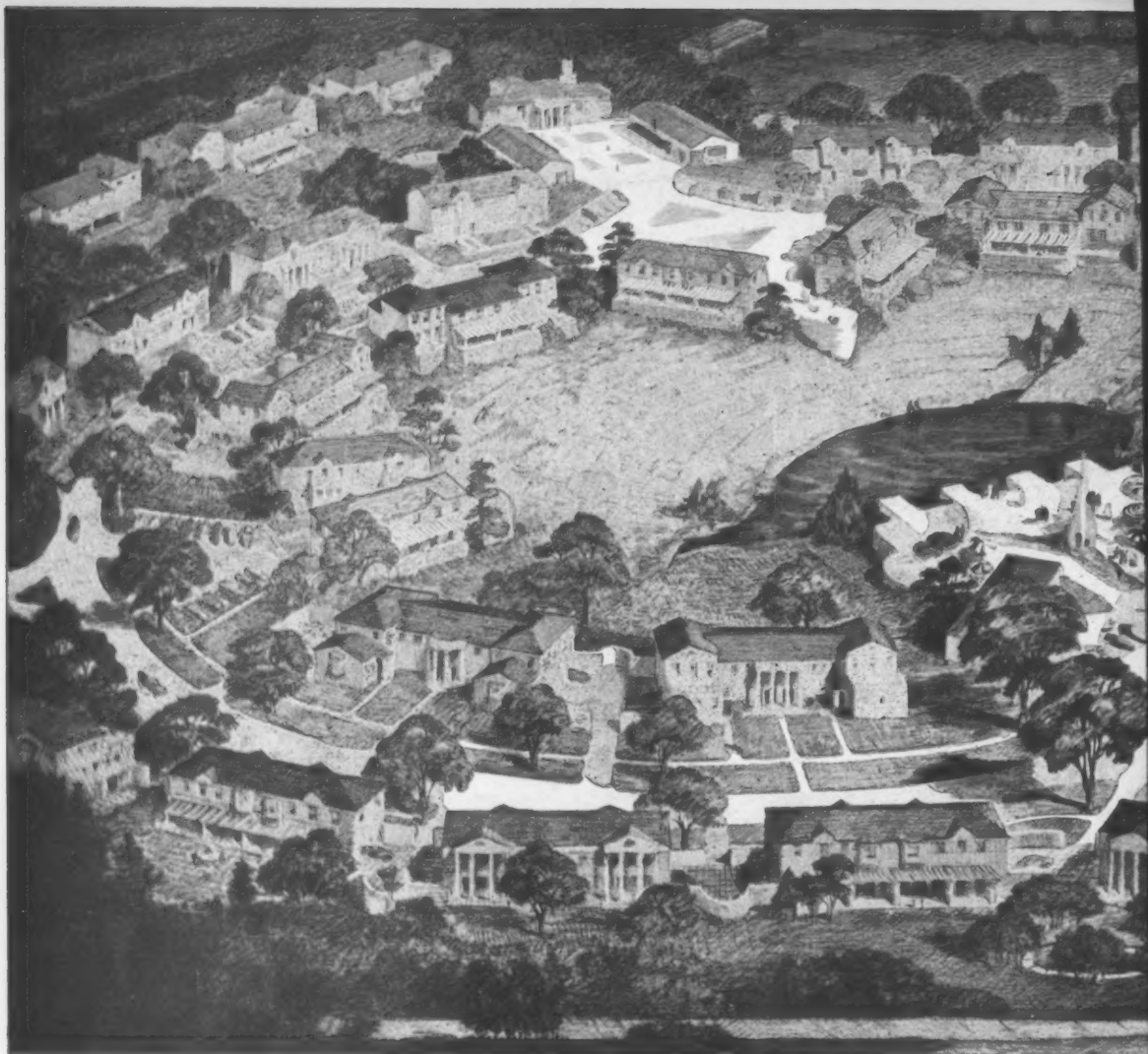


Inc., has been named to head an office which will serve the Michigan area for the company. His new address is 2833 Pittsfield Blvd., Pittsfield Village, Ann Arbor, Mich. Mr.

Whipps is well known to the refrigeration trade, having been connected with Ranco for a number of years.

W. B. Hill has been appointed manager of manufacturing for the household refrigerator division of General Electric Co. All refrigerator manufacturing operations at Erie, Pa., as well as at Schenectady, will

Continued on page 56



By Walter L. Bartel
The Ric-Wil Company

Of Things to Come

AIR conditioning, as far as the general public is concerned, is rapidly passing from the status of a luxury to that of a necessity. This is especially true in such commercial establishments as theaters, restaurants and specialty shops, where to build a new structure without provision for comfort cooling would be courting economic disaster.

The growing public acceptance of mechanical cooling poses the question to builders and planners of residential structures as to whether the benefits of this equipment should be extended to homes and apartments. In this connection, two problems present themselves: first, can the job be done for a small enough additional rental to be attractive?; and second, if cooling facilities are not provided, will the apartment (or home) be considered obsolete in a few years?

To provide a practical answer to these questions, Clyde R. Place, New York City consulting engineer, made an

THE REFRIGERATION INDUSTRY



A panorama of the proposed suburban development, designed by Leonard Schultze & Associates, upon which the study reported in this article was based. (Artist: Hugh Ferriss.)

urban areas, and in a development of this type should be doubly advantageous in that it would provide a desirable service to the apartment dwellers as well as a profitable investment to the operator of the project.

The estimated annual cost pro-rated to air conditioning for the 328 separate apartments is \$22,600; the cost of cooling per room, per season, amounts to \$15.30. For a four-room apartment, it would come to \$61.20 for the cooling season, and spreading the cost over a period of twelve months would mean an addition of \$5.10 to each month's rent.

This comparatively low cost per room for the cooling service does not include power for the circulating fan, which would be included in the tenant's monthly charges for electric service. As a further cost reduction item, the plan provides for the furnishing of cool air to the first floor only of a duplex apartment in the daytime, and to the second floor at night. This operation would be controlled by the tenant, since no provision is made to operate the dampers from a central point. No tenant, however, can use more than his allotted share of the fixed amount of chilled water available to each apartment.

The design temperatures for the study were taken as those for New York and vicinity as given in the A. S. H. & V. E. Guide—to maintain inside conditions of 80° dry bulb and 50% relative humidity when outside conditions do not exceed 95° dry bulb and 75° wet bulb in the summer, and to maintain 70° inside with an outside temperature of 0° in winter.

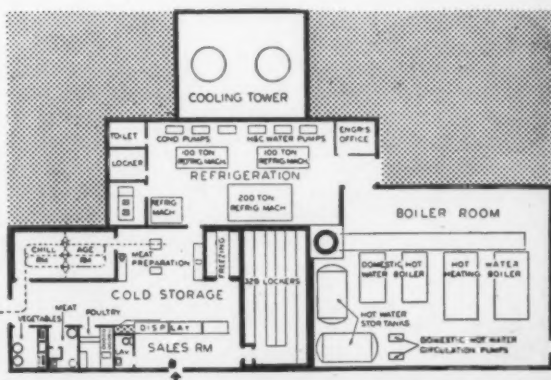
Lacking accurate data on the length of time the refrigeration equipment would be required to operate, an arbitrary figure of 1,500 hours per season at 50% capacity was assumed. While the actual figure may differ from year to year, this is considered a good average. An error of 10% to 25% either way would make little difference in the total yearly operating cost, since total electrical

engineering survey of a proposed suburban development, to study the possibility of combining summer cooling and winter heating, furnished from a central source and using the same distribution system, with chilled water circulated in the summer and hot water in the winter.

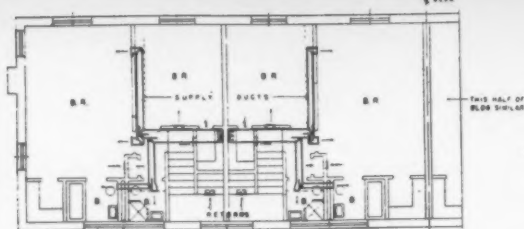
The project selected for the study was a suburban development designed by Leonard Schultze & Associates of New York City, and comprising 328 separate apartments in 36 bar shaped and 23 U shaped buildings. In the 59 buildings there are a total of 1,479 rooms.

Each apartment in the development has an automatically controlled forced air circulating system, for both heating and cooling. Boiler and refrigeration plant are located in a separate building. A feature of this building (shown in an accompanying sketch) is provision for a cold storage and locker department for use of the tenants of the development. Facilities in this plant are provided for both processing and storage; the storage section has as many lockers (328) as there are apartments.

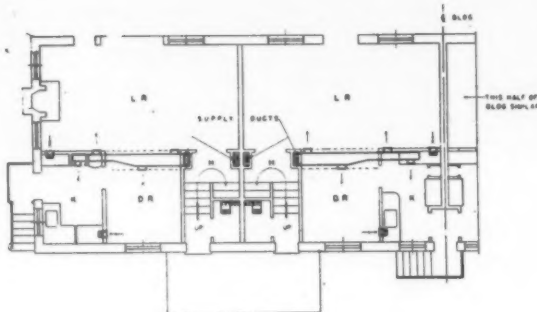
Demand for locker facilities is bound to increase in



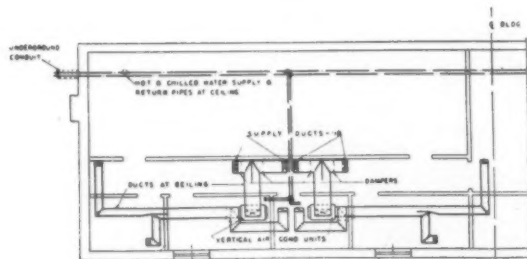
Here is a sketch of the central plant from which the cooling system is operated. There are two-100 and one-200 ton machines. Included in the proposed layout is a locker plant for use of tenants in the 328 dwelling units.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



BASEMENT PLAN

Floor plans of bar shaped unit, showing mains in basement connected to individual apartment units. Distribution system is of the recirculating type with supply and return ducts carrying air to both floors.

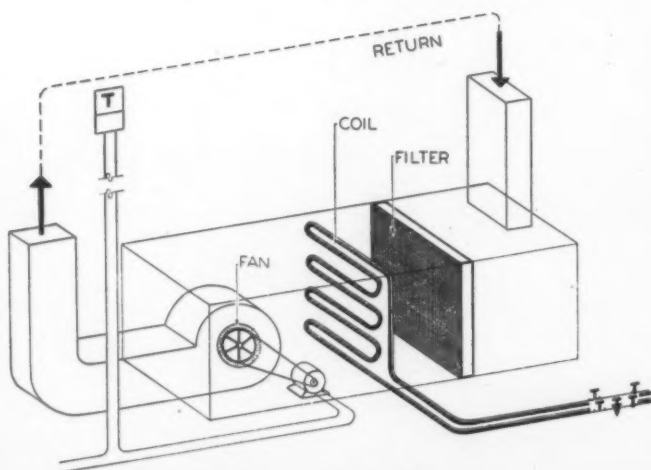


Diagram of typical apartment heating and cooling unit, showing system of supply and return ducts.

energy for driving the refrigeration equipment on this basis amounts to only \$6,000 per year, or 34 cents per room per month.

The central mechanical plant houses the boiler, refrigeration and cold storage equipment. For a development such as this, it was estimated that approximately 400 tons of refrigeration would be required to cool the 328 apartments. Refrigeration capacity was divided into two 100-ton compressor and one 200-ton compressor, with condenser water and circulating water pumps to correspond. This would give the engineer a choice of 25%, 50%, 75% or 100% of cooling capacity to take care of load fluctuations.

One cooling tower is provided, having two fans which would give 50% and 100% capacity operation. The saving in providing four points of operation, instead of one, does not warrant the purchase of the additional equipment involved.

Basic Equipment

The basic heating equipment for each apartment consists of a conventional type forced air heating unit, having a heating coil, motor-driven fan, filters, casing and thermostatic control with a system of supply and return ducts for circulating and recirculating the air between the unit and the rooms. The extra equipment need to make it function as a cooling system consists of extra rows in the coil, a small addition to the thermostatic control system and an increase in the sizes of the distributing ducts. This last change is necessary because normally a larger amount of air is required in the summer than in the winter.

As mentioned above, apartments occupying two floors have their supply ducts provided with dampers, so that in summer the lower floor may be cooled by day and the upper floor by night, effecting some considerable saving.

"Bar" shaped buildings have the air conditioning units in the basement; "U" shaped buildings have the units for six of the apartments in storage spaces adjacent to first-floor garages, and units for the two third-floor apartments located at the head of public halls on that floor. Duct runs have been kept as short and

Continued on page 63

You Can
Meet All Your
Requirements
With

the Complete Line of **CURTIS** Commercial Refrigeration and Air-Conditioning Units

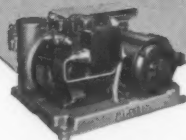
48 Water-Cooled Condensing Units — 1/3 to 30 H. P.

45 Air-Cooled Condensing Units — 1/4 to 3 H. P.

CURTIS offers both dealers and users a complete line of Commercial Refrigeration and Air-Conditioning Units in a wide range of types and sizes.

Curtis Air-Conditioners cool, dehumidify, filter, and circulate the air and are adaptable for heating, if desired. Available as packaged units, needing only power and water connections to install, or as central or remote types requiring ducts.

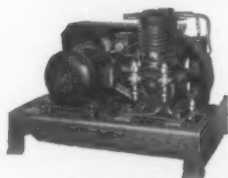
The result of Curtis' advanced engineering and 91 years of successful manufacturing experience is dependable, economical, trouble-free service throughout an exceptionally long life of heavy-duty service.



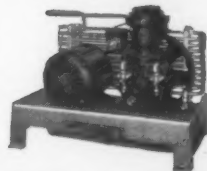
1/4 H.P. (cabinet type)



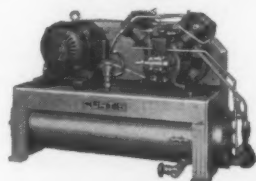
1 H.P. Air-Cooled



3 H.P. Air-Cooled



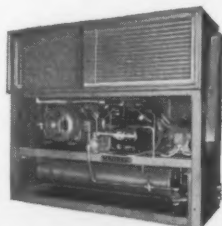
2 H.P. Water-Cooled (counterflow)



15 H.P. Water-Cooled Shell and Tube



Saturated Air-Condenser



Central Type Air-Conditioner



3 and 5-ton Packaged Air-Conditioner

Other Curtis Products

- ★ Air Compressors (Industrial)
- ★ Air Compressors (Automotive)
- ★ Air Hoists
- ★ Air Cylinders
- ★ Car Washers
- ★ Automotive Lifts
- ★ Curtis Circular Saws

AR-468

Curtis Refrigerating Machine Division
of Curtis Manufacturing Company
1915 Kienlen Avenue St. Louis 20, Mo.

"Let's share our knowledge—exchange our experience"

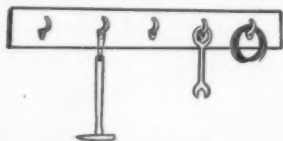
Here's how

To Keep a Nut Tight

To stop the low side nut on an expansion valve from loosening, cover it well with vaseline. The vaseline is to keep the water from collecting between the nut and the tubing. Frost-proof flare nuts are preferable, but this suggestion will work in instances where you don't happen to have one of them on hand.

Tool Hanger

A regular conduit clamp makes a very useful holder for tools on the wall above the work bench. The hanger can be placed in any position



that will accommodate the tool best. The clamp is not expensive; usually it costs about 5 cents. But it will do a great deal to give your work bench a neater, more workmanlike appearance.

To Cut a Tube

When cutting capillary tubing, make a groove around the tube with a pair of diagonal cutters. Then break off the tube. This leaves the tube open and ready for use.

Tips on Telephoning

1. Answer it right away. Show the customer you're on the job, ready to serve.
2. Give your name. Say "Jones Co., Mr. Jones speaking." Let the customer know he has the right number.
3. Be pleasant. Put some enthusiasm into your voice. Let the customer

Edited by
Warren W. Farr

know you're glad he called, and that you want to be of service.

4. Speak distinctly. Speak directly into the mouthpiece, and pronounce your words clearly. Don't talk too fast or use technical terms.

5. Call the customer by name. Get the name and address at the start and write it down. Then use it during the conversation.

6. Keep your voice low. The customer can hear a normal tone of voice. And his confidence is built up.

7. Let the customer talk. Don't break into the story. Let him get it off his chest; he thinks he knows.

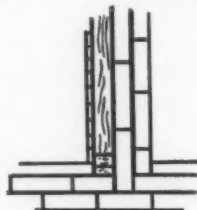
8. Ask questions courteously. Ask questions only when necessary, and then courteously, in the manner of a man who wants information.

9. Let the customer hang up first. That's courtesy. Besides, he may tell you something in that last word that will help you on the job. And thank him for calling.

How to Make Good Bump Rails

Many different types of bump rails have been devised and used to protect the finish of insulated walls and partitions from being damaged by hand trucks and from the ordinary wear and tear resulting from the handling of merchandise in cold storage plants.

One way this problem may be met is illustrated in the accompanying



sketch. The bump rail is anchored to a 2" x 4" embedded in the concrete wearing floor and is self-supporting. To add strength 2" x 4" uprights were spaced on 16" centers and the horizontal member is a 2" x 4".

Faced with tongue and groove flooring, the bump rail was covered with galvanized sheet iron and finished with aluminum paint.

Here's How an Expansion Valve Works

A thermostatic expansion valve regulates the flow of the refrigerant into an evaporator according to changes in the superheat of the refrigerant suction gas leaving the evaporator. A vapor is said to be superheated whenever its temperature is higher

HELP WANTED
WANTED: From refrigeration installation and maintenance contractors who are readers of **THE REFRIGERATION INDUSTRY**, ideas on how to do routine jobs more easily and quickly.

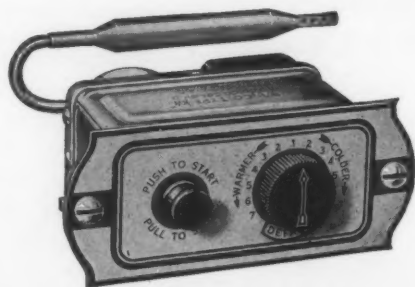
We want to pass these time and trouble-saving ideas on to others, so that they can benefit by them. Shop equipment, installation methods, servicing kinks . . . tough or simple, long or short, plain or fancy . . . that's what we want.

Send them to **HERE'S HOW**, c/o **THE REFRIGERATION INDUSTRY**, 812 Huron Rd., Cleveland 15, Ohio. We'll pay you \$5, or a copy of Althouse & Turnquist's "Modern Electric & Gas Refrigeration," for each suggestion published.

THE SERVICE MAN'S DEPARTMENT



Just a Minute, Joe!



For General or Exact Replacement. Replaces controls on Grunow and Mohawk Refrigerators. Equipped with overload coil.

Before you start turning the atmosphere blue, get in touch with your Ranco Jobber. He can recommend a precision Ranco Control to fit any replacement job. The full line may not be available for some time, but we are bending every effort to see that you will soon be able to obtain the exact control for every purpose.

Ranco engineering and Ranco research has not paused for a moment during the war years. You may look confidently to Ranco for refinements and improvements that will make your business even better during the post-war period.



Ranco Inc.

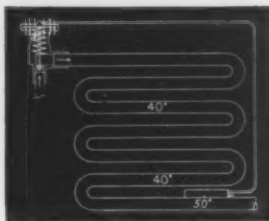
COLUMBUS 1, OHIO

than the temperature corresponding to its pressure at saturation.

The amount of the superheat is, of course, the temperature increase above the temperature at saturation at the existing pressure. Consider a refrigeration evaporator is a surrounding atmosphere of 70° operating on Freon and 37 lbs. suction pressure. The Freon temperature at saturation at 37 lbs. pressure is 40°. As long as any liquid exists at this suction pressure, the refrigerant temperature will remain at 40°.

As the refrigerant moves along the coil, the liquid boils off into a vapor

and the amount of liquid decreases until all of the liquid has evaporated due to the absorption of latent heat



from the surrounding air. The suction gas continues along the coil and remains at the same pressure (37

lbs.), but due to absorption of sensible heat from outside and heat of friction, its temperature increases.

By the time the suction gas reaches the end of the evaporator its temperature is 50°. The suction gas is now superheated and the amount of the superheat is, of course, 50°-40°, or 10°. The superheat in the suction gas depends upon the amount of refrigerant being fed to the coil and the rate of evaporation, or the load.

Superheat provides the main operating force in the thermostatic expansion valve. The valve is operated by two variable functions, the suction pressure in the coil and the superheat of the suction gas leaving the coil. The valve proper is installed in the high pressure liquid line feeding the evaporator, and the remote bulb is located either externally or internally at the suction outlet of the coil.

The remote bulb assumes the temperature of the suction gas at the point of application. Any change in the suction gas superheat at the point of bulb application tends to operate the valve in a compensating direction to restore the superheat to a predetermined valve setting. If too much liquid is fed into the coil, all of it does not boil off and some liquid approaches the remote bulb, lowering its temperature.

This operates the valve in its closing direction. Conversely, if there is not enough liquid fed into the coil, the increase in superheat in the suction gas raises the temperature of the remote bulb, causing the valve to operate in its opening direction.

Looking for Trouble: No. 2 High Head Pressure

If your check indicates a high head pressure, here are the things to check:

1. Air on non-condensable gas in the system.
2. Over-charge of refrigerant.
3. Dirty condenser.
4. Insufficient air over the condenser.
5. Poor ventilation.
6. Re-circulation.
7. Insufficient water through the condenser. This may be due to:
 - (a) regulating valve.
 - (b) lime deposit from the water.



**MORE GAUGE QUALITY
—PLUS—
the "RECALIBRATOR"**

Of course the first and foremost requirement of a pressure gauge is accuracy. But almost any gauge starts off accurate. The real measure of gauge quality is found in ability to stand up and stay accurate.

Marsh Gauges do. The Marsh reputation for making instruments of lasting accuracy is traditional. You would need no better reason for insisting on Marsh Gauges for every application. But you have still another reason—the Marsh "Recalibrator".

If some abnormal condition knocks a Marsh Gauge out of adjustment a twist of the "Recalibrator" screw will restore its accuracy at all points on the dial—a feat that cannot be accomplished with certainty by the conventional zero adjustment.

You get lasting accuracy when you select the Marsh Gauge . . . and on top of that the "Recalibrator".

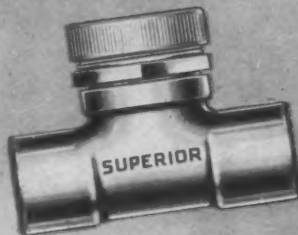
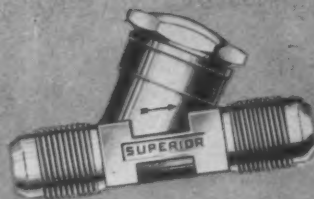
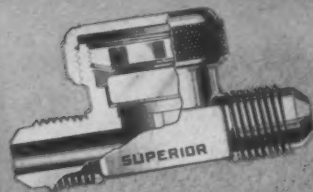
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Refrigeration Instruments

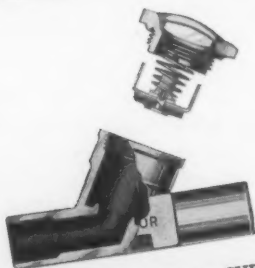
Superior "Non-Chattering" CHECK VALVES AND LIQUID INDICATORS

SUPERIOR CHECK VALVES—unique design, positive acting, spring-operated—cannot chatter, hum or buzz under any normal operating conditions. Pressure drop is negligible. Install one in the suction line of each low temperature circuit of all low temperature jobs—your assurance of maximum performance and trouble-free operation.

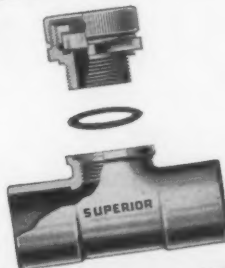
SUPERIOR LIQUID INDICATORS—call them liquid indicators, sight glasses, or refrigerant shortage detectors—one should be installed in the liquid line of each system. Seal cap over sight glass is double assurance against damage and leaks.



Note these exclusive features



The novel design of these SUPERIOR Check Valves permits the easy removal of all internal parts—as a unit—while soldering lines to valve connections, or for subsequent inspection.



Entire upper assembly of SUPERIOR Liquid Indicators—in all sweat sizes—may be removed as a unit to preclude damage by heat while soldering lines to body connections.

If you haven't a copy of Catalog R2, request one today

SUPERIOR

**VALVE & FITTINGS COMPANY
 PITTSBURGH 26, PENNSYLVANIA**

OFFICES IN PRINCIPAL CITIES • STOCKS: CHICAGO (6) • LOS ANGELES (15) • JOBBERS EVERYWHERE



25 lb. pail illustrated.

The Ideal Dehydrant for Refrigerants

JAY CEE refrigeration gel is one of the most efficient dehydrating agents. It is especially prepared for dehydration of refrigerants, and may confidently be used for drying Freon, Methyl Chloride, Sulfur Dioxide or any other similar agent. Removes acids, prevents rust or corrosion and is not affected by oil. The special particle size retains its crystalline structure — assuring uniform distribution in the cartridge and complete contact with all pore surface areas.

We offer you this economical 25-lb. container with resealable Easy-Pour spout. Dehydrators can easily be filled from this Easy-Pour container, and resealed to protect unused contents until needed. Special gasketed cover makes Easy-Pour container air-tight when not in use.

There are excellent opportunities for jobbers and distributors to develop profitable business on Jay Cee Silica Gel in a few territories. Write for details.

JOLIET CHEMICALS, LTD., INDUSTRY AVENUE, JOLIET, ILLINOIS



SILICA GEL

A superior dehydrant

THE INSIDE STORY...

Continued from page 23

lowed his suggestion or not. What he's paying you for—and what he'll call you back for again—is the result.

That this system works out in actual practice seems to be proved by Mr. Coad's list of satisfied (and steady) clients for air conditioning maintenance and installation work. Here are just a few of them:

City of St. Louis, Terminal Railroad Association, Automobile Club of Missouri, Statler Hotel, Chase Hotel, Donnelly Funeral Home, Lupton Funeral Home, St. Louis Post-Dispatch, Star-Times, and Globe-Democrat; radio station KSD, Three Sisters department store, Richman Brothers Co., Layne Bryant, Sonnenfeld's (women's apparel stores), Paul Brown Building, Frisco Building, Swift Printing Co., Calaria Building, Ely Walker & Co. (dry goods manufacturer), and the Third Baptist Church. These systems, all of them air conditioning installations, range in size up to 300 tons.

All contracts for maintenance work are handled on a time-and-material basis; the type and variety of work is such that the company does not consider it advisable to undertake contract-type maintenance at a flat seasonal rate.

As a part of its servicing operations, the company paints various lines different colors—red for the high-pressure side of the system, green for the low pressure side. This has proved a great time-saver for its

men, for it enables them quickly to figure out what lines do what on every job. Not a convenience for customers, Mr. Coad says, this feature is strictly a service for service men.

What troubles should an air conditioning service man be equipped to diagnose, if he's to make a go of this type of work? Lots of things, Mr. Coad says—almost too many to list. But in the forefront of educational requirements are a thorough knowledge of the problems of air control, air velocities, and the new automatic control systems. All this in addition

to the fund of working information that he'd amass in working with the normal type of commercial and industrial refrigeration equipment.

For instance, Mr. Coad contends, in nine out of ten cases of compressor failure, the fault is not that of the compressor. There could be, for example:

Grit under the expansion valve.
Improper pipe sizes, allowing oil to get into the system and burn up the compressor.

Clogged air filters.

Mr. Coad has an interesting story



MOISTURE? SEDIMENT? ACID?

**YOU
Name
the
Problem**

DFN Provides the Solution



**DFN Cartridges Available
for *Every* condition of
Moisture, Sediment, Acid!**



McINTIRE DFN OUT

Since DFN Cartridges are interchangeable, you can quickly alter the cartridge charge of a DFN Shell to combat aggravated moisture, sediment and acid conditions. Simply select correct DFN cartridges—for High Moisture . . . Acid-and-Moisture . . . Sediment-and-Sludge . . . Sediment-and-Moisture . . . or Sediment. When the temporary problem is licked, return the standard DFN Cartridge, which handles normal moisture, sediment and acid in *one* unit.

Besides its *unique* flexibility, the DFN System provides:

1. full strength dehydration—cartridges are mechanically packed, hermetically sealed;
2. low-cost maintenance—DFN Shells stay on for repeated use, only inexpensive Cartridges are replaced;
3. less servicing—stays on the job longer because it holds more moisture, sediment and sludge;
4. faster servicing—cartridges are easy to install.

Ask your distributor or write us for Catalog R-7.

Wire Mesh Products
Monel • Brass
Bronze

Refrigerant, Oil and Liquids and Gases Fabricated to specification

McIntire Connector Co., Newark, 5, N. J.



—Chain Store Age

"I'd like to see the room where they freeze prices."

Only the



**DFN
SYSTEM**

**DEHYDRATES
FILTERS
NEUTRALIZES**

DEHYDRATORS • STRAINERS

FILTERS • NEUTRALIZERS

to tell in connection with an air conditioning installation in the National Stock Yards Bank, National Stock Yards, Ill., a twenty-ton job. At the time his company was called on for help, the company had enlarged its quarters with an addition 75 x 75 feet, and was considering an extra five-ton machine because a temperature difference of 12° was all that could be obtained in the original space with the equipment it had.

D. C. Air Conditioning rearranged the duct work on the entire job. After the system was revamped and hooked

into the existing equipment, it was able to maintain a T. D. of 17°, despite the extra area to be cooled. As a result, the additional five tons of equipment has never been added.

Proper air direction was the answer in this job, as it is in many others among those the company is called on to serve.

One of his "rearranged" jobs Mr. Coad is proudest of is in the Calaria Building, in west St. Louis. Until his organization took over the system and set it up according to their standards, the job was a veritable mainte-

nance man's nightmare. The building, a U-shaped affair with a rather large lobby, is served by a 45-ton system comprised of one 15- and one 30-ton compressor. Formerly, these units never quite achieved the "balance" required to keep the shops in the building at a constant and comfortable level; they were either too cool, or not cool enough.

Now, with the re-arranged system, either the 15-ton or the 30-ton unit handles the entire building capably—both are never required, and except for check-ups there hasn't been a service call from the building's management in the last year. The system can be varied in capacity from 0 to 45 tons. Here's how it works:

When the system is turned on at the beginning of the business day (usually about 7:30 a. m.), the 15-ton unit can handle the requirements easily. Later on, as the outside temperature goes up, the 15-ton unit is turned off and the 30-ton job goes into operation. But never yet, since the "reconversion" was made, has it been necessary to operate both units at the same time.

It's Always in Balance

Included in the system are two 12-ton blower units, two 10-ton blowers, and a single 2-ton blower. If more blowers are calling for refrigeration, the compressor is completely loaded and balanced out through mechanical energy. As an individual zone requires cooling, that zone only is supplied. The system is in balance at all times, regardless of the cooling load. This was the major change over the method formerly employed.

The liquid temperature supplied to the expansion valve is maintained at 98° F. Suction temperature at the coil is kept at 32°; suction temperature at the compressor at 44°. Oil level between the two compressors hasn't varied over 1/8 inch since the system was revamped.

Pressure in the system is equalized by a combination of pressure controlling through an automatic expansion valve which operates a back pressure regulating valve between the condenser and the sump connecting the suction lines of the two units. To make the operations possible, the back pressure regulating valves, solenoid valves in both suction and discharge lines, high pressure by-passes,

SPRAGUE *Universal* MOTOR-STARTING CAPACITORS

Write for Sprague Booklet C-352 "A New Complete Story on Motor-Starting Capacitors." Get the facts about the small, Sprague Series 3500 *Universal* Motor-Starting Capacitors which enable you to make almost any replacement from a very small stock. They fit anywhere—are more dependable than the big old-style units they replace—are available for immediate shipment from 24 mfd. to 350 mfd., 110 V. A.-C.

SPRAGUE PRODUCTS CO., North Adams, Mass.

Jobbing distributing organization for products manufactured by The Sprague Electric Co.

**Prompt
deliveries!**



**This
ONE SMALL
UNIT REPLACES
ALL OF THESE!**



half of the existing expansion valves—all of these were replaced by the system outlined above. And, although Mr. Coad claims he's never described the system to an informed outsider who thinks it would work, the plant has been going, without a service call, ever since the change was made. What's more, this particular method of balancing a variable cooling load has been the "pilot" for a considerable number of other installations which have been troubled by similar operating difficulties.

PAY AS YOU GO...

Continued from page 33

it shouldn't keep right on working.

While Mr. Finney was in the army, the business was kept open by his wife, with the assistance of two service men who concentrated on keeping customers' equipment going. Both of these men have since gone into business for themselves, but they continue to handle some of the firm's service and installation work on a contract basis. Finding the proper type of service men for an operation like his will be a tougher job, Mr. Finney says, than getting salesmen.

Service Men Collect

For under the firm's system, service men handle all collections on installed equipment along with their regular daily calls. This requires men who can get along with customers, and who can in reality act as "advance men" for salesmen on future sales to that customer.

Good service men, Mr. Finney feels, won't be easy to find for some time. He has been searching for some for several weeks without much success. His service men are strictly on their own, and men who can fit into that category just don't come along every day. Mr. Finney wishes his service men recruitment were as easy as he expects his sales recruitment will be. Ideally, he'd like his service men to be part-salesmen; for service men, he says, have the world's best opportunity for selling, if they're sales-minded enough to recognize their opportunities.

He'll Go Industrial

But while he appreciates the opportunities in the straight commercial

field, it's the industrial refrigeration market that appeals to Mr. Finney most of all. Up to the time he went into the army, the company had done several industrial jobs—liquid cooling, instrument testing, and others—and the work opened his eyes to the opportunities in that field.

Only recently, another installation was completed by the firm for the P. R. Mallory & Co. organization. In one of his jobs for that company, Mr. Finney recalls, his firm put 6 inches of insulation into an ordinary household cabinet which was scheduled for

some low-temperature use. Used for testing in connection with a bomb release being developed by Mallory, the cabinet had to come down to -60°F .

About 15 or 20 industrial accounts like this, Mr. Finney believes, would give him a steady year-around refrigeration business, something he'd really like. Installations would be varied enough—liquid cooling, X-ray cooling, instrument testing, oil cooling, rivet cooling—to make each one interesting, and he'd be able to do a thorough job.

**"JUST OPEN
THE VALVES
AND
PLUG IT IN"**

AMERICAN Farm Freezer

★ **QUALITY** ★
PERFORMANCE ★ DEPENDABILITY

Designed for
**DUAL
PURPOSE
FREEZING**

★ Features

- 1 Refrigerant—Methyl Chloride Freon when available with either complete refrigerated liner or plate coils, contingent on market availability.
- 2 Motor $\frac{1}{2}$ H.P. 110-220 A.C. Note: Shipped for 110 A.C. Single Phase 60 Cycle.
- 3 6 Ft. Plug-in Cord.
- 4 Insulation: Bottom Sides and Top 5" Approved.
- 5 Doors Equipped with Moulded Rubber Gasket.
- 6 Hardware—Snap Lock with Padlock Hole for Protection.
- 7 Finish—Baked White Enamel.
- 8 Control—Thermostatic.
- 9 Shipping Weight (Crated) 750 Lbs.
- 10 All Joints Sealed with barriers against vapor transmission.
- 11 Meat capacity—Approx. 500 to 600 Lbs. contingent on cuts and wrapping.

Prices and specifications subject to change without notice. Government regulations complied with.



A dual purpose unit with one compartment for quick freezing and other for storage. Shipped for 110 A.C. single phase 60 cycle. Handsome baked white enamel finish. Cabinet shipped with compressor set for -15°F . in quick freeze compartment and 0° in storage compartment. Economical to operate. Send for folder and prices.

We manufacture a complete line of Walk-in Coolers. Also 6', 8', 10' and 12' Beverage Coolers. Milk Coolers and Low Temperature Cabinets in 8, 15, 22 and 30 cubic foot sizes. Will send full information on request.



AMERICAN REFRIGERATOR & MACHINE INC.
615 NORTH THIRD STREET ★ MINNEAPOLIS, MINN.

DISPLAY MANUAL FOR KELVINATOR DEALERS

First major element in Kelvinator's program of retailer marketing support—an imposing 40-page, four-color store display manual, designed to provide an up-to-the-minute guide and reference-work for dealers planning store and display improvements—is being distributed after nearly a year of preparation and development.

Complete with accurate, detailed construction blueprints, the new display manual, called "Displaying Appliances of Tomorrow," provides plans for six basic styles of store and appliance display, adaptable for use in both 25 and 50 foot store widths, and appliance departments of various sizes and requirements. The plans, covering everything from store fronts to model kitchens, are completely flexible and provide a wide variety of adaptations.

In each of the styles, planning is comprehensive, down to the smaller details. Bays, background panels, windows, floors, showcases, audition counters, shelves, "closing" arrangements—all of the physical details of good merchandising—are covered.

Why the Trend Is Strong to CHICAGO SEALS and VALVE PLATES



Chicago Seals and Valve Plates make a better servicing job on all refrigerators, in less time, at less cost, at more profit . . . and more service men and more jobbers are finding out this fact every day.

CHICAGO SEAL CO.
20 North Wacker Drive, Chicago 6, Ill.



G.I.'s at Walter Reed Hospital in Washington sample the first batch of ice cream turned out by the new Emery Thompson "Fox-hole" freezer which was presented to the Quartermaster Corps by the Boys' Club of America.

FLOATING SHRIMP PLANT PUT INTO SERVICE

"Mother" of a fleet of 100 or more craft fishing for shrimp in the Gulf of Mexico, the Betty Jean is pioneering a new method of putting fish and shell fish on the table fresher and tastier than ever before.

This unusual 44-ton vessel, newly equipped and put in service, is the first floating plant for the complete processing, and freezing and storage of shrimp by mechanical refrigeration.

It makes possible, within a few hours and sometimes only a few minutes after the shrimp are caught, the same operations usually performed by shore storage and processing plants which ordinarily do not receive a catch until some time after the shrimp are taken from the water.

The Betty Jean is equipped with two 12-plate freezer units in a room 7 x 10 x 8 feet. The bottoms of these units are set in a cold storage room below the deck and the tops project four feet over the deck, a stainless steel roof serving as a work table for heading the shrimp and packing them in 5-pound cartons. Cartons are frozen in less than six hours, and then packed ten to a case. Cases are stored at zero temperature in the space provided for that purpose below deck. The new floating shrimp plant can freeze up to 7 tons per day.

TRANE ANNOUNCES EXPANSION PROGRAM

The Trane Co., has announced a postwar expansion program that will more than double its present manufacturing facilities.

A major part of the program consists of building a new addition to the main plant that will increase the

size of that plant by 40%, and permit the fabrication of heating and air conditioning units on an assembly line basis. It will also provide greater facilities for the production of refrigeration and special heat transfer equipment. A second new building is being constructed on these premises to house factory office workers.

The company also has purchased the factory building which it leased during the war for the production of heat exchange equipment for airplanes. This area will be used for the production of heating specialties.

ALL PREST-O-LITE SALES HANDLED BY LINDE

Sale of the complete line of Prest-O-Lite compressed gas cylinders and valves is now being handled by The Linde Air Products Company. Manufacture of these products will be continued by Linde's associate, Prest-O-Lite Co., Inc. Cylinders are made in a variety of sizes for refrigerants, fumigants, aerosols, acetylene, liquefied petroleum and other fuel gases.

CROSLEY EXPORT HEAD TOURS SOUTH AMERICA

J. W. DeLind, Jr., Crosley director of exports, has just left for a visit to each of the principal South American countries.

Crosley's plans include supplying complete American-made products to Brazil, Chile, Peru and other principal South American markets.

DAVISON DIVIDEND

Directors of Davison Chemical Corp. have declared a quarterly dividend of twenty-five cents (\$.25) per share on its capital stock, payable Sept. 29 to stockholders of record at the close of the business Sept. 8.



A new addition to its factory at 340 N. Sacramento Blvd., Chicago, has just been completed by Rempe Co., for the manufacture of new post-war lines of unit blowers for air conditioning and refrigeration and fin coils for low temperature cooling.

pied by Capital Paper Co., and its subsidiaries in Indianapolis. Capital Paper Co. is distributor in Indianapolis and adjacent territory for Crosley Corp.

In addition to its Indianapolis operation the company has branches at Terre Haute and Evansville, Ind., Columbus, O., and Louisville, Ky.

Heading the company as president is S. Carroll Kahn. Lewis Lurie is secretary-treasurer and C. V. Jewell, vice-president and general sales manager. Distribution of Crosley products will be under the supervision of Harold L. Brewer.

NEW G-E MOTOR PLANT PLANNED FOR TIFFIN, OHIO

To meet the anticipated postwar increase in small motors for electrical appliances and other uses, General Electric has announced selection of a site at Tiffin, Ohio, and is selecting another site for a new manufacturing plant, both to be operated under management of the company's Fort Wayne (Ind.) works.

STRATO-CHAMBER PATENT ASSIGNED TO YORK

A patent embodying twenty-one claims relating to method and apparatus of aircraft stratosphere test chambers has been granted L. R. St. Onge, Philadelphia district engineer of York Corp., and assigned to the corporation.

Designed exactly to reproduce on the ground for test purposes flying conditions from sea level to 40,000 feet, the huge steel vacuum jugs reproduce altitude changes of both pressure and temperature at the same rate as occurs with a plane in actual flight. Also the strato-chambers can maintain stratosphere conditions for as long as need be. The men and material to be studied are whisked to the stratosphere in 10 minutes without ever leaving the ground.

Uses Storage Principle

The data thus obtained in York strato-chambers at Yale University, University of Pennsylvania, the Boeing Aircraft Company and for both the Army and Navy have resulted in improvements which are credited with making this country's air forces the most effective in the world under conditions without precedent in previous wars.

Mr. St. Onge's invention provides for storage of refrigeration, thus eliminating the necessity of installing an abnormally large refrigeration plant. This is accomplished by building, inside the strato-chamber, a "climb" chamber thermally separated from the refrigeration system. Cycle of operation calls for first cooling the entire chamber, including the "climb" chamber, to a temperature

considerably below the final temperature to be produced in the "climb" chamber.

Then the "climb" chamber is isolated, by means of dampers, from the cooling circuit and heated up to normal atmospheric conditions by electric heaters. After the test subjects have been put into the "climb" chamber, vacuum pumps and fans are started and the dampers opened to admit cold air to the "climb" chamber. A sufficient reservoir of refrigeration has been built up to reduce the temperature within the "climb" chamber to -70°F. in 12 minutes or less.

ADMIRAL MERGES ITS CHICAGO OFFICES

Admiral Corp. has consolidated its main offices in its principal plant at 3800 W. Cortland St. Space previously occupied at 444 Lake Shore Drive will be taken over in its entirety by Appliance Distributors, Inc., the company owned distributor of its products in the Chicago area.

WESTINGHOUSE STARTS COMMERCIAL PRODUCTION

Two new models of Westinghouse electric refrigerators for commercial use are now in production at the East Springfield, Mass. plant of Westinghouse, announces H. F. Hildreth, manager, refrigeration specialties department.

CROSLEY DISTRIBUTOR PLANS NEW BUILDING

A new building covering two acres of ground space will soon be occu-

"AIR CONDITIONING U." CLOSED BY YORK

At special exercises attended by high ranking officers of the Navy, the York Naval Training School, maintained and operated for the Navy by York Corp., under the direction of Frederic B. Kinley, since 1941, graduated its last class and the activities of the school were officially transferred to the Naval Training School at Norfolk, Virginia.

The school, established five months before Pearl Harbor for the specialized training of naval personnel in the operation, maintenance and repair of refrigeration and air conditioning equipment, has trained 1271 men in the four years of its existence. It is unofficially known throughout the fleet as "the University of Air Conditioning."

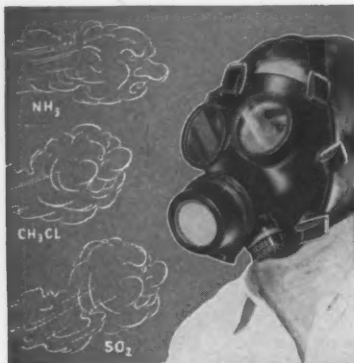
Originally planned to train submarine petty officers in the complex air conditioning equipment that makes U. S. submarines the world's most efficient, the course was later expanded to cover training in the handling of all types of shipboard refrigeration and air conditioning equipment on all types of vessels, and navy land-based equipment also.

LOCKER DIRECTORY

A 1945 directory of the frozen food locker plants of the United States has recently been issued by the National Frozen Food Locker Association, Des Moines, Iowa. Listed in the booklet are some 6500 locker plants, alphabetically by state and city in the state.

3-way Protection

...at lower cost



with **CESCO'S**
No. 605 FUME KIT



CESCO'S Healthguard Fume Kit (No. 605) offers triple protection to refrigeration servicemen. Quick-change filter cartridges provide safety against ammonia, methylchloride and sulphur-dioxide fumes... all in one convenient kit. The soft molded rubber face-piece of the fume mask, and the instantly adjustable headgear assure a gastight, comfortable fit for every wearer. Large hardened safety glass lenses give perfect visibility.

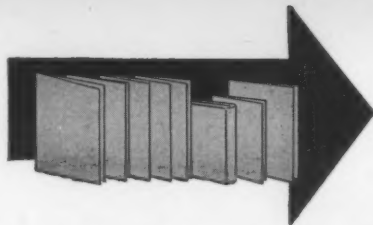
The CESCO Healthguard Kit provides economical protection because it is moderately priced.

For full information, write for CESCO's No. 605 Bulletin **TODAY**.



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EYE SHIELD CO.
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Chicago 12, Illinois

CESCO
FOR SAFETY



Useful Literature

The publications listed below are available to readers without charge. Simply list in the coupon at the bottom of this page the numbers of the items you wish to receive, and sent it to **THE REFRIGERATION INDUSTRY**, 812 Huron Road, Cleveland 15, Ohio. Your requests will then be forwarded directly to the companies concerned.

205—Air Freshener . . . Information on "Airkem", a chlorophyll air freshener recently announced by W. H. Wheeler, Inc. Tells what it is, how it works to remove odors from indoor areas, how it can be applied to existing ventilating and air conditioning installations.

206—Frozen Food Lockers . . . A new booklet, issued by Amana Society, outlining opportunities in the locker plant field, and telling of the services Amana provides in the design and construction of locker plant equipment.

207—Products Directory . . . A comprehensive directory of products and engineering literature, issued by Allis-Chalmers Mfg. Co., describing the lines of equipment it furnishes to various industries. Engineering literature is arranged according to products discussed.

208—Brazing Information . . . A copy of Low Temperature Brazing News No. 32, issued by Handy & Harman, covering the subject of mass production brazing with Easy-Flo brazing compound.

209—Freezer-Cooler . . . An eight-page bulletin issued by Amana Society, listing construction details and other features of its new Model 200 freezer-cooler. Lists complete specifications as to dimensions, capacity, insulation, interior equipment and refrigeration machinery.

210—Evaporative Coolers . . . A bulletin (C-1100-B27) issued by the Air Conditioning and Refrigeration Division of Worthington Pump & Machinery Corp., listing specifications, optional extra equipment,

selection tables and illustrating typical piping arrangements of its evaporative coolers.

211—Pumps . . . A condensed catalog, issued by Rutman Machinery Corp., which includes information on its new line of circulating pumps designed to handle large volumes of liquid at low heads with minimum power requirements.

212—Cooling Towers, Spray Nozzles . . . Three new bulletins (Nos. 450, 800 and 900) issued by the Cooling Equipment Division of Binks Mfg. Co., listing information on standard spray nozzles for air cooling, etc., Type S atmospheric spray cooling towers from 10 to 1200 g.p.m., and small series Type K induced draft towers in capacities from 40 to 600 g.p.m.

213—Axial Flow Fans . . . A bulletin (No. 745) issued by Buffalo Turbine Corp., listing data on its recently developed line of axial flow high pressure fans and blowers. Includes pressure flow characteristics graph.

214—Motors . . . A new sixteen-page folder issued by Wagner Electric Corp. (form GU-86) briefly describing its entire line of electrical and automotive products, including electric motors. Pictures and addresses of sales-service offices included.

215—Punch-Lok Data . . . A six-page folder on the Punch-Lok method of banding and splicing electrical applications, describing tools used in the method, and explaining in detail how to apply the bands on various electrical jobs. Available from B. F. Goodrich Co., national distributor.

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Refrigeration Industry, 812 Huron Road, Cleveland 15, O.

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10-45

THE REFRIGERATION INDUSTRY

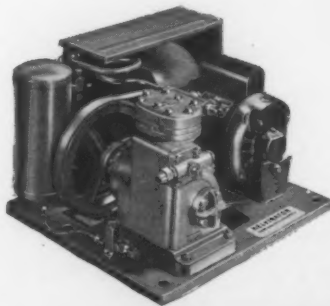
 *Happy Tales of
Trouble-Free Performance*



Customer: "What's going on here?"

Manager: "Everybody's raving about our sandwiches since that new Kelvinator Condensing Unit keeps our lettuce so crisp!"

In refrigeration it's economy, dependability and performance that count! And Kelvinator Condensing Units give all three as a result of 30 years of leadership in engineering, designing and manufacturing of Condensing Units. That's why progressive service men *always* specify Kelvinator!



Kelvinator
DIVISION OF HAHN-KELVINATOR CORPORATION, DETROIT

CONDENSING UNITS
SEALED • OPEN



FOR YOUR HOME—REMEMBER KELVINATOR REFRIGERATORS, ELECTRIC RANGES, WATER HEATERS AND HOME FREEZERS



AUDELS REFRIGERATION and AIR CONDITIONING GUIDE JUST OUT! 4 Books in One!



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examination, if O.K. I will send you \$1 in 7 days; then

remit \$1 monthly until price of \$4 is paid. Otherwise

I will return it.

Name

Address

Occupation

Employed by

DOES YOUR BUSINESS...

Continued from page 28

of the statement, overhead and net profit on the basis of labor-hours worked. This is the best method.

For example, say a job sold for \$150 and went into work on Oct. 30, was completed on Nov. 1, a profit and loss statement prepared on Oct. 31, the job estimated as follows:

Labor—20 hours @ \$1.25 per hour	\$ 25.00
Materials	57.50
Overhead expense	52.50
Net profit	15.00

Selling price\$150.00

On Oct. 31, the date of the statement, 12 labor-hours had been spent on this job, or 60% of the total estimated, all materials had been put in work, so this work-in-progress should be recorded as follows:

Labor hours—12 hours @ \$1.25 per hour—60% of \$25	\$ 15.00
Materials—all put in work ..	57.50
Overhead expenses—60% of estimated \$52.50	31.50
Net profit—60% of estimated \$15	9.00

To be recorded on October statement\$113.00

To be recorded in next period when work is completed... 37.00

Selling price\$150.00

If \$113 is not recorded on the October statement, the net will be that much less than it should be. In all shops, jobs are often held over from period to period at the time a profit-and-loss statement is prepared. Such cases vary in number and dollar-volume, but every maintenance man experiences them from time to time. They may be jobs brought in at the end of the month that cannot be completed until the next month under normal time allowances; or unusual conditions may create them, such as delays in waiting for materials, or more important jobs coming in for immediate attention that temporarily side-track the earlier jobs. Work-in-progress runs to a surprisingly high figure at times in some shops and if not calculated right away, net profit is distorted considerably. Even in smaller shops, more than \$500 often is carried over in this way, reducing the net for one period and inflating it the next.

Another Kick in the Pants

In costing estimates, the omission of work-in-progress gives you another kick in the pants because it makes you price-cut your jobs unintentionally.

Let's suppose Bill Jackson disregards work-in-progress, prepares a profit and loss statement on Dec. 31, for the fourth quarter, and has \$500 worth of work-in-progress at the end of the month, four-fifths of it completed. In other words, \$400 should be credited to December, but inasmuch as Jackson does not credit income from these jobs until they are completed, the net profit in the first quarter will be \$400 short. How will this affect the costing of estimates for the next period?

If Bill uses figures for the prior quarter as yardsticks for costing estimates in the next quarter, his experience figures for the period from Oct. 1 to Dec. 31, would be:

EXAMPLE I

Sales	\$7,500—100%
Cost of labor and materials	4,500— 60%
Margin of profit on sales	\$3,000— 40%
Overhead expenses ...	2,625— 35%
Net profit on sales ...	\$ 375— 5%

But this net is \$400 short. If Bill



The spotlight is on OASIS for drinking water satisfaction and efficient, low-cost operation. Check these important features—space-saving compactness... rugged construction... trim beauty... sanitary splash-free bubbler... cushion-mounted super-capacity condenser unit and many others. The OASIS Electric Water Cooler, designed and built by EBCO, pioneers in the water cooler industry for over 20 years, is the answer to the thirst problem!

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Columbus, Ohio



had made allowance for the work-in-progress, his profit-and-loss statement would look like this:

EXAMPLE II

Sales	\$7,500	
Allowance for work-in-progress	400	
Total income	\$7,900—100%	
Cost of labor and materials	\$4,500— 57%	
Margin of profit on all operations	\$3,400— 43%	
Overhead expenses	2,625— 33%	
Net profit on all operations	\$ 775— 10%	

In this revised version, only the net profit and income change in dollars, because all labor and materials used on work-in-progress jobs have been entered on the books during the first quarter, as has overhead expense. The net increases \$400 because the income for the period has increased \$400. If this isn't done, the net profit is deflated \$400 because the operating accounts have been charged with all costs on uncompleted jobs, so unless Jackson offsets the costs chargeable to work-in-progress with corresponding income, his figures will be out of gear.

In some instances, the work-in-progress is recorded on the books via a "Work-in-progress" account; in other cases, the adjusting figures are placed only on the profit-and-loss statement and the statements filed for reference. Either way will keep you straight on comparative analysis and estimate-costing.

If Bill Jackson did not record work-in-progress and used the experience figures in Example I to cost jobs for the next quarter, he would estimate a job as follows:

Labor and materials	\$120— 60%
Overhead expense	70— 35%
Net profit	10— 5%

Selling price

\$200—100%

On the other hand, if he recorded work-in-progress, he would use the experience figures shown in Example II and estimate a job in the next quarter this way:

Labor and materials	\$120 — 58%
Overhead expense	66 — 32%
Net profit	20.66— 10%

Selling price

\$206.66—100%

He would short-change himself \$6.66 on this job. On the basis of Example I, he does \$7,500 quarterly, so he would short-cost his jobs \$225 the next quarter on the same volume of estimated work. This indicates the

hazard to estimate-costing in not handling work-in-progress properly on the records.

If a refrigeration man prepares profit-and-loss statements yearly and bases his next year's estimates on these annual experience figures, failure to allow for \$400 in work-in-progress at the end of the old year might cause him to short-cost his estimates in the new year by \$900. On the basis of Example I, his annual net is \$1,500, so \$900 is a lot of money.

Work-in-progress is just another of the "bugs" inherent in business computation that the maintenance man must exterminate with an understanding of proper record practice.

The difference between successful operation and "just-get-by" in the installation and maintenance of refrigeration equipment is adequate recording and the ability to interpret recorded results accurately and intelligently. To hit this jackpot, work-in-progress is one factor you must not overlook.

COLD FACTS BY ANSUL



FREEZING THE MUD BEATS PUMPING IN SOME WET EXCAVATION JOBS. REFRIGERANTS CIRCULATED THROUGH PIPES DRIVEN THROUGH THE MUCK AROUND THE DIGGING AREA HELP CONTROL EXCESS WATER.

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JARROW PRODUCTS
420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

GRUNOW SERVICE . . .

Continued from page 34

in the cabinet. Check to see if your Carrene charge is correct as outlined in Table I, (August issue, p. 25) and recharge and purge, as described previously.

H. Inefficient Pump. Since Grunows have now reached a minimum age of nine years or more, and have been subjected to much abuse through bad service operations, many of the compressors are rusty due to moisture, or are scored beyond repair.

Naturally, an inefficient pump will result in long running time, but since it is not as easy to check the compressor as on other refrigerators, it is best to eliminate all other sources of trouble before condemning the pump. It should pull a vacuum of at least 28½ to 29 inches, since the normal operating back pressure is about 27 inches. Some symptoms that can be spotted are that the compressor vanes will rattle when the unit is shut off, although this may be due to high head pressure, or the vane buffer springs having previously been removed.

On some models, the evaporator will frost, but will have patches about the size of a silver dollar which will not frost. The boiling of the Carrene will be weak and will not "crackle" as it will when operating properly. With a good compressor, and all other factors contributing, the boiling and the "crackling" can be heard with the door closed.

When the compressor has been checked with a vacuum gauge and proven inefficient, remove the board from the machine compartment as explained previously. A Model "C" pump assembly has a terminal block on the side of the pump, and the leads are simply clipped on. All other models are soldered in the relay box, with the exception of the

CORNELL UNIVERSITY has announced the establishment by **Phileo Corp.** of four \$1,500 research fellowships for study in the frozen food field at its new school of nutrition. Effective this fall, the fellowships afford one year of study in frozen food economics, cookery, engineering, or processing.

1937 model, which had screw-type connections.

Remove the fan blade and assemble to the replacement pump. If the mounting balls are soft, it will pay to replace them. Connect up the wiring and flare connections and add enough Carrene to bring the total charge up to the amount as indicated for that model. Purge carefully, and check frost line before leaving.

I. Water In The System. Moisture in a Grunow will freeze out at the point of expansion and cause considerable trouble, as indicated by a rusty compressor and plugged condensers and driers. Since Carrene can be carried in ordinary one-gallon metal containers, many service men are lax in their service procedure for the elimination of moisture. For the customer's satisfaction, and for elimination of call-backs, bake out the compressor, condenser, and float or meter if the unit has been taken into the shop for repairs or rebuilding. Many headaches have been traced to moisture.

In any event, if moisture is indicated by erratic refrigeration, drain out the entire Carrene charge, and discard. Change the drier or meter assembly and recharge new Carrene. Unless extreme conditions are en-

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countered, this should remedy the trouble.

If the Carrene is discolored when it is drained out, it would be best to remove the entire board to the shop. Drain out the oil charge in the compressor, inverting it, and allowing the oil to come out of the discharge connection. Wash out with a quart of carbon tetrachloride and recharge with the proper amount of No. 4 Suniso oil or its equivalent. Replace the drier, or meter, as previously described, and bake out the entire assembly.

Dome May Need Cleaning

If the oil from the compressor is dirty, it may be necessary to remove the dome and wash out, being careful not to tear the motor leads. On Model "C", the stator is external and dismantling is much simpler.

A bake-out of six to eight hours at 200° F. with a vacuum of at least 28 inches will insure you of a good job.

J. Improper Air Circulation. Due to restricted space in some kitchens, the customer will remove the air duct from the rear of the cabinet. The machine in most circumstances would operate satisfactorily in this manner.

However, the customer shoves the box up against the wall and thereby restricts the air flow, causing the unit to overheat. In some other cases, the customer will build a custom-built enclosure around the box so that it would be next to impossible to remove the cabinet without help from a magician.

In such an event, the only thing to do is obvious—remove the obstruc-

tion. There should be at least 6 to 8 inches clearance to the nearest shelf or obstruction over the top of the cabinet, and 3 to 4 inches between cabinet and wall.

(Editor's Note: More data on Grunow servicing problems will appear in next month's issue.)

SQUARE D TO DOUBLE MILWAUKEE PLANT

Square D Co. is taking steps to double the size of its present plant in Milwaukee, according to F. W. Magin, president. The Milwaukee opera-

tion is devoted to industrial electric motor control and other electrical equipment chiefly for industry.

PRESSED STEEL CAR CO. TO MAKE FREEZERS

Pressed Steel Car Co., Chicago railway rolling stock manufacturer, has announced its entry into the major appliance field and expects to have some of its Presteline products on the market by next January. The line will include home freezers and air conditioning units, and will be marketed initially exclusively through distributor organization.

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Compact, Easily Installed Unit Does Away With Draught Beer Waste

The uniform, constant 40 deg. temperature of the new Temprite cooler means that each and every glass is dispensed perfectly. Common beer waste, which is invariably the result of incorrect temperature, is eliminated.

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ABOUT PEOPLE . . .

Continued from page 35

be under his general direction.

Mr. Hill was superintendent of the refrigerator unit factory at Schenectady from 1930 to 1942, and has recently been superintendent of motor manufacturing at the Schenectady works.

Lester D. Linehan has been appointed sales engineer for the Chicago office of Penn Electric Switch Co. He will work with E. B. Maire, manager of that office for Penn. Before joining Penn, Mr. Linehan was a field engineer for U. S. Electrical Mo-



tors, Inc.

He also was a heating sales engineer for 15 years for the Peoples Gas Co., Chicago.

James H. Rasmussen has resigned as general sales manager of

the manufacturing division of The Crosley Corp. to become a vice-president of the United Wall Paper Co. of Chicago. He will assume his new position on Oct. 1. Announcement of Mr. Rasmussen's successor at Crosley will be made at a later date. He has been associated with Crosley in various capacities since 1941.

Christian Steenstrup, the "daddy of the G-E hermetically sealed refrigerator mechanism" and consultant for General Electric Co.'s refrigeration engineering division, retired Sept. 1. He had completed 44 years of service with the company. Best known of Mr. Steenstrup's accomplishments is the hermetically sealed refrigeration unit, which he developed and built in 1925.

J. L. Armstrong has been appointed sales manager of Schaefer, Inc., manufacturer of low temperature frosted food and ice cream cabinets. As head of the Schaefer nationwide factory and sales representatives' organizations, he will integrate the firm's sales, advertising and sales promotion programs.



Mr. Armstrong joins the company with a background of over 12 years in sales, sales promotion and advertising work.

Dr. C. E. Waring has been appointed by The Davison Chemical Corp. as technical assistant to Chester F. Hockley, president. Until recently, he was supervisor of Frigid-Aire's main chemical, metallurgical and process engineering laboratories, as well as supervisor and coordinator of its consultative assistance to the U. S. Army Ordnance in the development and research on preservation and packaging of military materiel.

Kenneth Cook has been named sales training manager of American Central Mfg. Corp., Connersville, Ind. Prior to joining American Central in 1940, he had been business manager for American Gas Service Co., Pittsburgh, and with the sales promotion and market research divisions of Crosley Corp.

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REFRIGERATION**

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of the
Nation's Food
Supply*



Coils for Refrigeration
Coils for Air Conditioning
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When all of the dozens of parts that make up a commercial U. S. Gauge have been constructed and assembled, they pass to Final Testing for a last check up. They have been in-

spected and approved over and over again during the course of completion but the final O.K. slip is the "diploma" which sends U.S. Gauges to their appointed jobs.

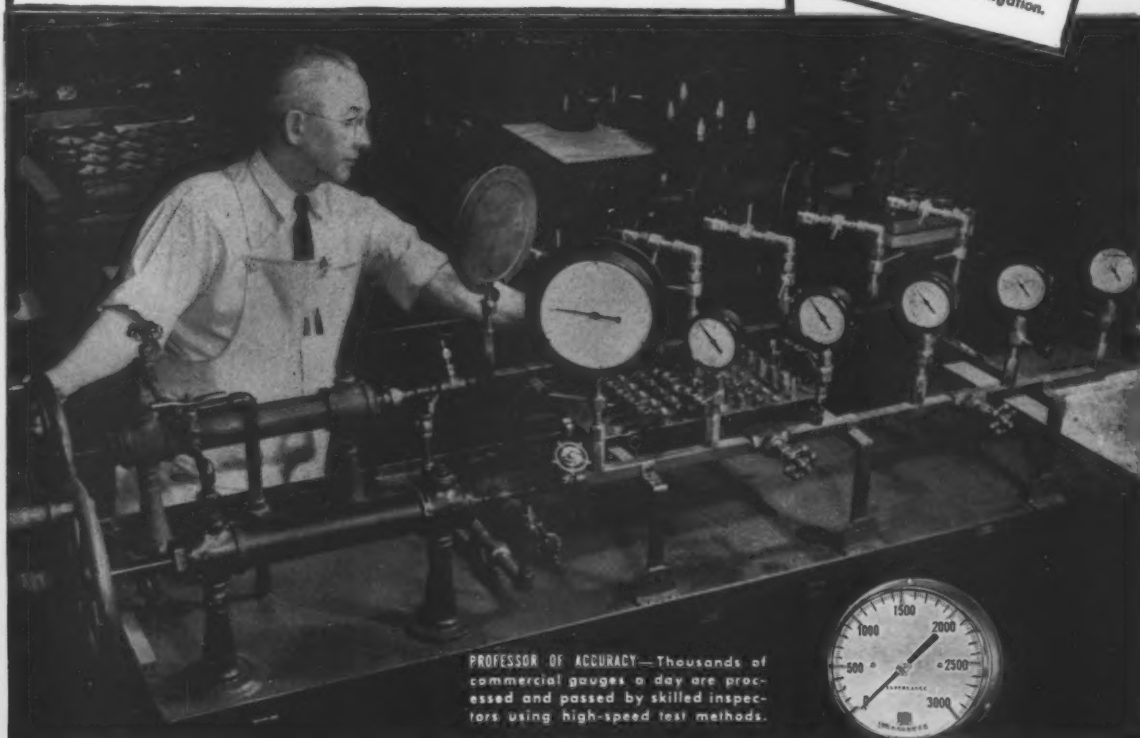
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Final Testing is obviously important to you. But of more importance to you if you could only see it at work is U. S. Gauge's *Manufacturing Control*. Our "MC", as we call it, watches every step from raw material to final testing. It's the real reason 6 out of 10 buyers choose U. S. Gauge.



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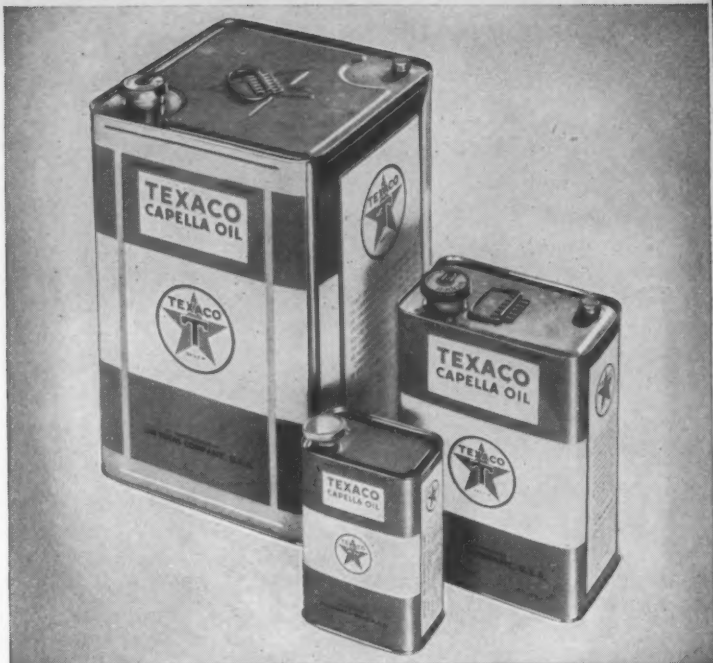
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This Oil...

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INCREASED SALES and profits, customer satisfaction and repeat business . . . all are yours with *Texaco Capella Oils*, available for every type of refrigeration and air conditioning equipment. Check these five Texaco advantages:

1. *Outstanding Quality.* Superior refining processes applied to carefully selected crudes assure freedom from moisture, and high stability. Consequently, *Texaco Capella Oils* do not react with refrigerants. They are strongly resistant to gumming and sludging. All have exceptionally low pour points.

2. *Complete Line.* Six different viscosities provide a range of *Capella Oils* to meet manufacturers' lubrication requirements for all air conditioning and refrigeration equipment.

3. *Proved Results.* Long experience in service has shown that *Texaco Capella Oils* definitely assure smooth, trouble-free compressor operation. For this reason, leading manufacturers use, recommend or

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4. *Sales-Building Containers.* 1-qt., 1-gal., and 5-gal. re-sealable cans are designed for protection and convenient use. They also make attractive displays.

5. *Prompt Delivery.* Order *Texaco Capella Oils* now from the nearest of more than 2300 Texaco distributing plants in the 48 States. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

FREE LUBRICATION GUIDE

Lists make and type of compressor and refrigerant in 55 electric refrigeration units and 32 air conditioning units. Shows at a glance which oil to use for each. Guide can be bound into service manual or used as wall chart. Copies upon request.



TEXACO Capella Oils

FOR ALL AIR CONDITIONING AND REFRIGERATION EQUIPMENT



TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT—CBS

The refrigeration machinery for each block is usually served by Diesel engines which operate 110 volts and 220 volts, 3 phase, 60 cycle, tropical wound motors. The layout of these blocks is of a character which makes for efficient handling of the foodstuffs and for easy access to inspect or repair the refrigeration machinery.

All Pacific advance bases shore refrigeration plant structures were built by, and all refrigeration machinery was installed by, the Seebies. In addition to that, they perform the repair and maintenance services on these facilities; and guided by the manufacturers instruction manuals and by the Bureau of Ships "Instructions for the Operation and Maintenance of Refrigerated Plants," the seebies operate the refrigeration machinery.

To prevent explosions from hydrostatic pressure in using some equipment, the men aboard ships and ashore are warned not to fill the refrigerant cylinders to capacity.

Maintenance Routine

Condenser tubes are cleaned every three months and sometimes more frequently.

At least every two hours a complete check is made of all pressures and temperatures.

Every two weeks tests are made to determine condenser leaks.

All operators of Navy refrigeration machinery are supplied with a "trouble-diagnosis chart" which deals with subject matter ranging from noisy compressors to leaky head gaskets, and from cylinder and crankcase sweating to compressors which will not start.

In the trouble-diagnosis chart all information is listed, in column arrangement, under three heads, namely: (1) "Symptom or Difficulty," (2) "Condition May Be Due to," and (3) "Correction." For example, under the head of "water valve chatters", the chart states that the trouble may be due to "water pressure too high", therefore it suggests that the operator should "reduce water pressure by adjusting water pressure—reducing valve or throttling stop valve."

Take another example. Under the head of "crankcase frosting", it states that the trouble may be the result of

THE PRACTICAL Refrigeration Engineering MANUAL... by Harold Smith

IX. Ice Cream Processing (Cont.)

PART III

REFRIGERATION IN THE HARDENING ROOM

SINCE from one to three days' production of ice cream as a rule is stored in the hardening room, it would be advisable to have this room measure at least 12x8x8, or 512 square feet. The temperature of the hardening room would be -15° , and the refrigerant temperature -25° , making a 10° difference. The ice cream would be brought into the hardening room at 26° and would be hardened down to -10° , providing a 36° temperature drop.

The load for the hardening room would be as follows: 512 square feet multiplied by .0375 ("K" factor for 8 inches of cork) multiplied by 90° temperature difference, (figuring the outside air 75° and the hardening room air -15°), equals 1728 B.T.U.

THE SERVICE LOAD

The service load, figured from Table D, chapter II (Storage Coolers under 1000 square feet, heavy service) would be 512 multiplied by 4.5, or 2304 B.T.U.

The products load would be 200 gallons of ice cream multiplied by 4.9 (weight of the cream) or 980 pounds. As 80% of the latent heat will be removed in the hardening room, 980 pounds multiplied by 72, which is 80% of 90, latent heat factor, gives us 70560 B.T.U. The cream comes in at plus 26° and is lowered to -10° , a temperature drop of 36° , so the specific heat load would be 980 multiplied by .45 (specific heat below freezing) multiplied by 36 (temperature difference), or 15876 B.T.U., making a total of 86,436 B.T.U. per day or 3602 B.T.U. per hour,

which would be the hourly products load. Adding this load to (1) the heat leak and (2) service load, there is a total of 7634 B.T.U. per hour. Putting the hourly load on a basis of 16 hours operation would result in an hourly load of 11,451 B.T.U.

SELECTING PROPER CONDENSING UNIT

The proper condensing unit to be used for the hardening room on the basis of -25° refrigerant and 11451 B.T.U. would be a 3 H.P. water-cooled compressor. If plate coils or pipe coils are used as stands with gravity convection, 573 square feet of plate surface would be required.

Figuring 573 square feet multiplied by 2 ("K" factor) multiplied by 10° (temperature difference) equals 11,460 B.T.U. Should a fan be used to give forced air circulation, the square feet of plate and pipe coils could be reduced to between 300 and 350 square feet. Should a forced-convection type unit be used, a unit producing 11,500 B.T.U. at 10° temperature difference would be required.

USING ONE COMPRESSOR

Should all of this equipment be placed on one compressor, a 5 H.P. water-cooled compressor would be required, if the freezer is operated by direct expansion. If the freezer is operated with a brine system, a 1 H.P. compressor should adequately handle the mix cooler and the freezer, with a 3 H.P. unit operating the hardening room. These figures, of course, assume that a brine tank properly insulated with brine and -10° circulation through the freezer jacket would be used.

"liquid refrigerant returning to compressor". In this case the chart recommends that the operator should "examine expansion valve for proper adjustment. See that hand expansion valve is closed."

From a general overall point of view, and without reference to specific places or types of systems, some of the Navy's troubles with refrigeration machinery, even though they may be of only a minor nature, are frosted suction scale traps, trapped refrigerant expansion pressure, mud in cooler

or compressor jacket because of operating in muddy waters, defective, or worn, packing, abnormally high pressure due to dirty condenser tubes, worn piston rings, air, oil or moisture in the system, and corrosion and sur-rosion.

All shore refrigeration installations at Pacific advance bases must battle against "surrosion"—a combination of abrasion and corrosion, due to a hot, humid atmosphere filled with tiny grains of dirt and coral sand, chlorine and sulphur compounds, and

ammonia producing micro-organisms of oceanic animal and vegetable matter,—all swept across the island by the wind which penetrates everywhere into the open shelter structures of the refrigeration plants.

This means that all units of refrigeration machinery must be inspected, cleaned and preserved frequently. In some places it is necessary to clean and spray the Diesel engines each day with Diesel oil and coat them once a month with zinc chromate. Motor windings must be cleaned daily or weekly, depending upon the local conditions, with carbon tetrachloride, thoroughly dried, and sprayed with insulating varnish. And the refrigeration units must also be frequently cleaned and coated with rust preventive compounds.

When the threads of fittings, or fixtures, become too worn to be leak proof the Seebees give the threads a coat of solder. Silver solder is used to give strength and rigidity in joints. And when no parts are available (and that sometimes happens), the Seebees, and the personnel of repair ships, use their ingenuity to make parts out of the materials which are at hand.

Table "D"—Simplified Formula For Estimated Service Load
(Reprinted from Ch. II (July, 1944) of Manual.)

Type of Refrigeration	Heavy	Medium	Light
Service (Walk-in Coolers)—Total outside sq. ft. area x	4.0	3.0	2.5
Reach-in Coolers and Display Cases—Total outside sq. ft. area x	4.5	3.5	3.0
Storage Coolers (under 1000 sq. ft.)—Total outside sq. ft. area x	4.5	3.5	3.0
Storage Coolers (over 1000 sq. ft.)—Total outside sq. ft. area x	5.0	4.0	3.5

We will not go further into the specifications of brine tanks, since this was fully covered in Chapter VIII (Milk Processing) and the requirements would be similar, except that the brine would be operated at a lower temperature.

X. Apple Storage

IN sections of the country where apples are raised in large quantities, refrigerated storage facilities become an important factor. An apple producer without refrigerated storage facilities is entirely at the mercy of weather conditions and as the fruit usually ripens very quickly after being picked, particularly during weather above 60°, immediate sale is necessary to prevent loss occurring. When mechanically refrigerated storage plants are operated, the winter variety of apples can be held in storage and in good condition up to five or six months, thus providing the owner ample time to find the best markets and sell his crops under the most advantageous conditions.

While the summer and fall types of apples can also be carried for a long period through the use of mechanically refrigerated storage, the period for storage is limited to some 30 to 60 days, as a rule, for these earlier varieties.

Apple storage plants are usually constructed along conventional lines. Wherever possible they

are built partly underground. Under the most favorable conditions they are entirely underground, other than the roof, and this type of construction adds materially to the efficiency of the storage rooms and also reduces the refrigeration load if the equipment is constructed properly.

For the purpose of economical operation, an apple storage room should be insulated the same as all mechanically refrigerated storage rooms, using from 3 to 4 inches of insulation in the walls and where the ceiling is exposed to outside air, 4 to 6 inches of insulation is desirable. The method of treating the floor of an apple storage cooler varies. In some coolers, an insulated floor is used with a top floor of concrete. In others, sand is placed on the ground and no insulation is used. As the ground temperature remains close to 60 degrees below the frost line, the heat transfer load is not extremely large. However, the use of insulation cuts this load requirement to a minimum.

(To be Continued Next Month)

AMINCO OIL SEPARATORS



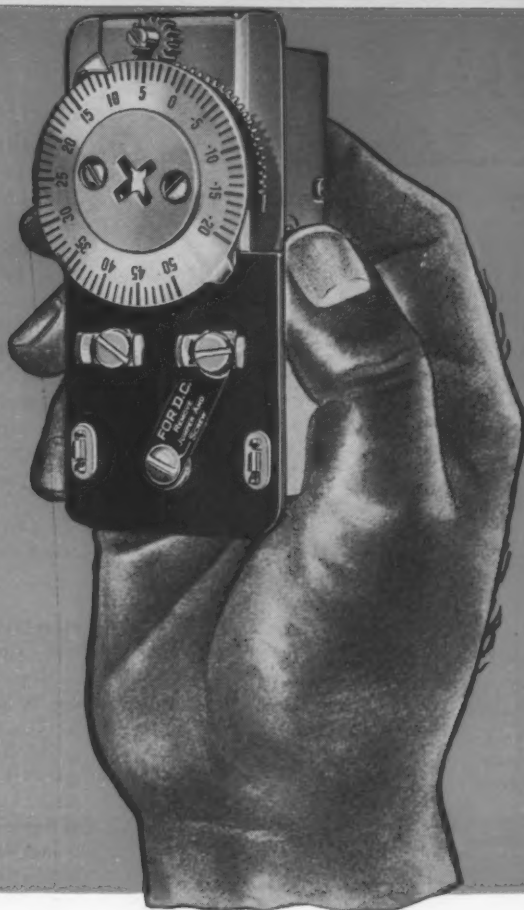
Aminco Oil Separators protect compressors by maintaining correct oil level in crankcase and by excluding oil from refrigerant stream they enable coils, condensers, valves and dehydrators to function most efficiently.

These oil separators are made for jobs from 1/2 H.P. to 120 tons and are used everywhere, ashore or afloat, where efficient refrigeration is desired.

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This compact, accurately balanced, sturdy switch mechanism is the second basic part of White-Rodgers temperature controls. Because the Hydraulic-Action element is so powerful, more hard-working life can be built into this switch. That is why White-Rodgers controls are so widely endorsed by the heating, air-conditioning and refrigeration fields. Engineering data supplied on request for your products requiring accurate temperature control.

Here's How
It Works:



CONTRACTED

At left is a cross-section of the diaphragm and part of the liquid-filled capillary. The liquid has contracted, the diaphragm moving inward, causing the switch to function.



EXPANDED

In view at left, the liquid charge of the capillary has expanded with a rise in temperature. This positive force moves the diaphragm outward and causes the switch to function.



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Richmond Asks Water-Savers on Air Conditioning Systems

Water economizers must be a part of all air conditioning equipment installed in Richmond, Va. in the future, acting utilities director J. E. Metzger has announced. Otherwise the city will not furnish water for such equipment.

The new rule was established because the peak use of water for air conditioning units occurs at the same time as the peak demand for water for general purposes.

This Question of Steel Piping

The question asked in this department in August regarding the use of steel piping in Freon air conditioning systems has brought the following interesting response from M. Harry Grace, veteran air conditioning engineer of Greenville, S. C.:

"Regarding the steel tubing and pipe, the only objection I find with it is the dirt and scale that collects inside and around it, along with burrs that are left on the inside surface by the manufacturers. I believe the manufacturer of steel tubing and pipe is passing up a nice bet by neglecting to pay more attention to his finished product by removing the scale and dirt and reaming out the ends and leaving a clean smooth surface for the easy flow of the refrigerant when in operation.

Wrapping Would Help

"A little more attention to the fittings, and a method of wrapping both the steel pipe and fittings before shipment is made would be a big help to the erecting engineer in the field. Since oil is miscible with Freon in that a certain percentage is absorbed and moves along with the Freon in its cycle around the system, it is necessary to have a clean, free surface to keep from trapping or obstructing its flow to the evaporators.

"After the installation of the steel tubing, it is a good plan to install an ordinary gate valve at the suction end of the coils and build up about 200

lbs. air pressure, then open the gate valve wide and get rid of all that scale and dirt, trying the same stunt over and over again until you know the coils are clean.

"If I went to the expense of installing a 150-ton air conditioning unit in my plant, I would see that several first-class driers as a permanent installation were installed with by-pass valves, and the driers could be easily removed and replaced at will without interfering with the unit's operation. Then, on occasion, I would by-pass the liquid through the drier and feel to see if it was warm. Then, after an hour or so of operation, I would switch it back on its regular run without flowing through the drier. This hand operation about once a week would be a big help to perfect operation."

Does anyone else have any ideas on the subject?

Los Angeles Contractors to Share in Construction Show

The Refrigeration Contractors Association of Los Angeles is among a group of eight construction contractors' associations who will sponsor a construction exposition and home show presenting new construc-

tion materials and building methods. The show has tentatively been planned for early next spring.

Salad Oil Cold Storage Improves Products

Refrigeration of salad oil is reported as being highly satisfactory to Wheatley Mayonnaise Co., Terrell, Tex., firm. The company has found that salad oil storage between 40 and 60° pays in both quality of product and customer satisfaction. All oil used in the company's products is now refrigerated.

Refrigeration makes possible a product that appears smooth and "dry" in appearance in contrast to a thin, "greasy" appearance of products made from oil in ordinary non-refrigerated storage.

Hotel Guests Want Air Conditioning First

More and better air conditioning is what hotel guests—those of the Hotel New Yorker, anyway—are going to want as soon as it can be installed. A survey recently completed by the hotel revealed that 90% of the more than 17,000 persons questioned specified air conditioning of hotel accommodations as the improvement they would like to see emphasized by hotels. Air conditioning led all other "wants" specified by the patrons . . . even ahead of the demand for overnight laundry service.



Photo from Utilities Engineering Institute

Newly installed Deepfreeze -120° F. Cascade unit at Utilities Engineering Institute in Chicago is officially started by S. J. Seibert (in front of machine), Deepfreeze official. Audience includes men in training at the school, and U.E.I. president and vice president, E. P. Sorensen and W. H. Hoehne (front row, left).

THINGS TO COME . . .

Continued from page 38

straight as possible consistent with satisfactory operation.

Before we had actual figures to work on, it was planned to provide an outside air connection for 100% fan capacity so that the tenants could take advantage of any cool outside air during the night to save refrigeration. However, if this connection were inadvertently left open during the winter, the coil could freeze—and since the savings in refrigeration resulting from this arrangement would be relatively minor, we decided not to take such a risk. So the connection for fresh air to the unit was omitted, the system relying entirely

ter" and "off". When turned to "summer", the thermostat starts the fan when the room temperatures rises above its setting, thus causing air to be circulated to the various rooms. When turned to "winter" the thermostat starts the fan when the room temperature falls below its setting, causing warm air to be circulated in the ducts.

In actual practice, it probably would be satisfactory to leave the thermostat set at about 72° both in summer and winter—just shifting the "summer" and "winter" control once each season. During in-between sea-

sons, the tenant could turn the control to "off" and open his windows.

As stated above, the type of system decided upon consists of a central mechanical plant, from which a series of underground supply and return water mains services all units. The mains are installed in underground conduit protected against corrosion and insulated so that the temperature of water in the pipes will not be affected materially by weather conditions.

A reversed return system is used for the flow of water in the two main circuits. That is, the building in each

ADDITIONAL COST OF COOLING SYSTEMS

Additional Plant Space	\$10,000
Refrigeration Equipment	60,000
Apartment Air Conditioning Units:	
Extra Coil Surface	\$10
Additional Automatic Control	10
Larger Ducts	10

Per Apartment	\$30
328 Apartments @ \$30 each	\$10,000
Total Extra Cost for Cooling	\$80,000

YEARLY OPERATING COST

Return of Investment based on 20 year life of equipment	\$ 4,000
Average interest at 6% on unreturned investment	2,520
Taxes 2%, plus Administration 4% = \$80,000 x 6%	4,800
Electrical Energy (Ref. Plant) based on 2c/KWH	6,000
Condenser Water Loss	100
Operating Labor	3,600
Repairs	1,580

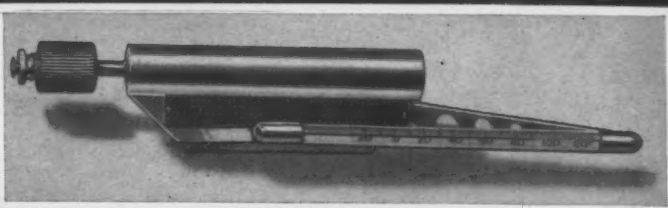
Total Cost of Operation per Cooling Season	\$22,600
Cost per Room per Cooling Season	\$15.30
Cost per Room per Month	1.27

upon leakage from the outside through windows and doors.

Accepted standards for fresh air per person vary from the old figure of 30 cu. ft. per minute to the wartime minimum of 5 cu. ft. per minute. Leakage through windows on an average hot summer day would probably approximate the lower of these figures. If desired, a window could be opened part way to increase the amount.

The apartment thermostat is arranged to give the tenant three positions of control: "summer", "win-

Over 1,000,000 jobs
are waiting for this



THERMOSTATIC CONTROL TESTER
—the instrument that detects
control defects

A pocket size tester that accurately
and quickly analyzes a defective thermostat

features

1. Indicates quickly cut-in and cut-out temperature.
2. Does not require removal of control from cabinet.
3. Eliminates un-warranted tampering with thermostatic controls.
4. Shows customer defective part.
5. Scientifically designed for easy operation.
6. Excellent shop tool for adjusting controls.

(MODEL A100) \$19.50

Complete with pocket case, instructions and bulb adaptor. Ready for use. Fully guaranteed.

ORDER DIRECT OR SEE YOUR JOBBER

AIRCRAFT SERVICE COMPANY

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Jobber Inquiries Invited

TRACE

REFRIGERANT LEAK DETECTOR

STABILITY OF COLOR

● A refrigerant leak detector, whose color has faded after injection into a compressor, is as useless as a silent burglar alarm. Left on guard, it can't give warning!

● Highside engineers had long realized that a top product must have a stable color that would withstand the beating of an extended stay in a re-

frigerating unit, before getting a chance to appear and tell its story. And then it must be glaring.

● And so, when it was introduced to the critical eyes of the trade, it was appropriately named TRACE because, with its stay-red color, it can trace leaks of any refrigerant in any refrigerating system . . . new, old or reconditioned.

TRADE PRICES

4 oz. bottle	\$ 1.00
(48 bottles to a case)	
1 pint bottle	\$ 3.00
(24 bottles to a case)	
1 quart container	\$ 5.00
(12 containers to a case)	
1 gallon container	\$16.00
(6 containers to a case)	

Save 10% on case lots

*For tough-to-spot
Refrigerant Leaks*

HIGHSIDE CHEMICALS CO.

195 VERONA AVE., NEWARK 4, N. J.

The Fight against MOISTURE



Moisture has various ways of disturbing a person's slumber. The agility of the individual with the leaky roof is to be compared only with the mental labors of the refrigeration service engineer who stays awake nights worrying about some of his moisture cases.

Neither need worry, if he is wise. The first hires a reliable roofer, and the engineer turns to TZ. Both methods are standard practice.

● A TINY AMOUNT ●
● A BIG JOB ●
● SMALL COST ●

THAWZONE

Fully Patented by U. S. Patent
The PIONEER FLUID DEHYDRANT

*The Moving
Dehydrant*

circuit nearest the mechanical plant on the supply side of the main has the shortest supply main but the longest return main. This should tend to equalize pressures at the take-off points in each building, but in the event that pressures need to be balanced more accurately, a test tee can be provided in each supply and return connection to each air conditioning unit for manometer and thermometer readings, and a plug cock in the supply pipe to regulate the amount of water flowing to each unit. After water flow to all of the air conditioning units has been properly adjusted, plug cocks can be locked in position and the test tees plugged. The engineer in the central plant can vary the temperature of water delivered to the mains according to outside temperature conditions, sun load and wind velocity. This prevents any tenants from setting his thermometer at an abnormal temperature and getting more than his allotted share of cooling.

Cooling Water Limit

Quantity of water to be circulated is determined by the maximum summer heat load, using an 8° rise in temperature between the water entering and leaving the different air conditioning unit coils.

By installing a meter on the chilled water line to the apartment cooling unit, the amount of cooling used during a given period can be determined and charged to the tenant. Since the refrigerating equipment and plant would have to be of sufficient size to accommodate all apartments, and the fixed charges would be the same regardless of the number of tenants using cooling, cost of the cooling per room would vary, depending on the number of apartments cooled and the amount of cooling used by each apartment.

Practical solution would be to add the cost of summer cooling to the rent. Each tenant could then control the amount of cooling desired, up to the maximum allocated to his apartment. This maximum is fixed by a locked valve in the chilled water line.

Considering all these factors, it would appear that the additional of summer cooling to apartment developments such as this is entirely practical, from the standpoint of both the operator and the individual tenant. The added rental cost would be

slight compared to the comfort obtained—and, if cooling were not provided, there is always the possibility that it would either have to be added later (at great additional cost) or have the development considered obsolete in the near future.

CROSLLEY CORP. SETS PRODUCTION GOALS

A production of 450,000 electric refrigerators in the first full year of post-war operation has been set for the manufacturing division of Crosley Corp., says Frank A. Schotters, vice-president in charge of production.

The Richmond, Ind., plant is now ready to produce 600 refrigerators per day when materials are available. Upon completion of the entire reconversion program, 1800 refrigerators will be produced per day, in addition to home freezers.

SCHAEFER DISTRIBUTOR

Valley Equipment Co., Charleston, W. Va., has been appointed distributor for Schaefer, Inc. in that territory. A. E. Teagan is president of the company, and G. C. Hyder is secretary-treasurer. The company will distribute the complete Schaefer line.

Service Engineers Should Know...



"VIRGINIA" METHYL CHLORIDE IS REALLY LABORATORY TESTED

— the content of each and every container —
large or small — is analyzed 3 separate times.



BOILING POINT TEST

1. A measured sample from each cylinder must be water-white in color and when boiled to dryness must record within 25/100 of 1 degree a constant boiling point of minus 23.8°C. This test detects unwanted hydrocarbons, dirt and oil impurities.



ACIDITY TEST

2. The acid content in a sample of known weight must not exceed 6 parts per million; low acidity prevents copper plating and oil sludging.



MOISTURE TEST

3. The moisture in a sample of known weight must not exceed 80 parts per million; — low moisture prevents freezing at expansion valve and refrigerant break-down.

The name "V-METH-L" on the cylinder is your guarantee of quality. Sold by refrigeration supply jobbers everywhere.



VIRGINIA Smelting Co.

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76 BEAVER ST., NEW YORK 5 131 STATE ST., BOSTON 4
Agents for Kinetic's "Freon-12" — "Freon-22" — "Freon-11"

Electrimatic Regulating Valves

Automatic control and regulating valves for Freon, Methyl Chloride and Ammonia. A large variety of sizes and types available for practically any refrigeration requirement.



WL water regulating valves for Freon, Methyl, or Sulphur. $\frac{3}{8}$ " orifice and $\frac{3}{4}$ " FPT. Brass body construction. Large capacity—no chatter.

WP water regulating valves are available in $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{3}{4}$ " FPT sizes. Brass body construction for Freon, Methyl or Sulphur. Easy adjustment.



WK water regulating valves are De Luxe Pilot Operated Modulating valves. Iron body, simple adjustment. Available in sizes ranging from $\frac{3}{4}$ " to 2" FPT.

WR regulating valves for Ammonia are diaphragm operated and highest quality corrosion resistant materials are used. Available in sizes ranging from $\frac{3}{8}$ " to 2" FPT.



Electrimatic valves are individually tested for efficient, economical operation. Trouble free performance.

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Over the COUNTER

(Editor's Note: Frank and Jim, two typical jobber's salesmen, continue below a discussion of some of the considerations the independent parts jobber must face in expanding his distribution activities to include some of the more popular packaged unitary commercial equipment—water coolers, low temperature cabinets and the like. Last month's comments covered such matters as display floor location, servicing obligations, and the general problem of "what fits where" into such a jobber-distributor setup.)

FRANK: You know, Jim, the way you've figured it out, we can handle the problem of setting up a display room so that our customers can use it in demonstrating to their prospects, and of having them assume the full servicing responsibility, and still keep doing a full-time job in our main line, parts and supplies—which we still want to keep as our "big" business. To go a step further, how would you handle financing of dealer sales?

JIM: That won't be difficult. Most of our servicemen customers have a good credit standing in their communities; they're established business men. Where equipment has to be financed, local banks should be more than glad to assist them, since the earning power of their money on these loans is much greater than on the usual types of loans. Yes, I think we can rely on the local banks to take the financing problem off our hands.

FRANK: This will give us a swell setup. Without any service responsibility or financing problems, we should be in a position to sell a lot of equipment to our regular customers.

JIM: Sure thing—not only will we get a sizeable increase in our sales volume, but we will be helping our customers by furnishing them appliances and equipment items that

they can sell to their customers.

FRANK: It was pretty tough for a lot of these firms to get hold of such items before the war; I bet they'll appreciate our efforts to line up these items and make them available in the future.

JIM: Speaking of packaged goods merchandise, the last trip I made through the country talking to our customers in the small towns I found that they are all talking to farmers and lining them up for appliances when they are available—milk coolers, farm freezers, household refrigerators and all such



items. Most of the farmers made money during the war with good prices on their products, and have been saving for these new conveniences. Rural electrification lines have been extended rapidly, and many more of these farm homes have electricity today, increasing the rural refrigeration market.

FRANK: Do you think our manufacturers of parts and supplies will be unhappy about our getting into the appliance field?

JIM: I don't think they will, so long as we handle these items as a part of our overall supply picture. If we were to specialize on the sale of these products, putting all of our major effort in that activity and letting the parts business slide, they would naturally feel that we were getting away from the parts business. But so long as we handle it as I've suggested, selling the

equipment to such of our customers as wish to buy them and not putting any particular emphasis on the sale of this class of merchandise, I don't believe they will seriously object.

There is also another angle to this thing. Some of the manufacturers from whom we have been buying condensing units for years make household refrigerators, others make self-contained air conditioning units and water coolers. By selling these unit equipment items, we will be increasing our purchases from such manufacturers which will, of course, be of interest to them. Then, too, in most instances where unit equipment is sold a certain amount of parts and accessories is sold to go along with installation, not to mention the future service replacements they are bound to sell after the equipment has been installed.

FRANK: Looking at this thing from your standpoint, it seems that by getting into this business on a heavier scale than we have in the past, we'll not only greatly benefit our own sales picture, but will help many of our customers too.

JIM: I think we should talk to all of our customers when they come in and suggest that they start checking on their customers who'll be in the market for new equipment, and make lists of prospects and turn back that information to us, so we'll have an idea of just what items are going to be most in demand. This will help us in lining up our stock. If all of our customers, both in the city and in the country, start missionary work in lining up prospective buyers of unit equipment, they should be in a position to do a big business on this merchandise.

FRANK: *I'm with you 100%; count on me to help you all I can. In the meantime, we'll be contacting our customers to see how they feel about this kind of merchandising and to find out how many of them are going to be interested in buying this equipment from us.*

• • •

NAMED CARRIER DEALER

Ross and Witmer, Inc., has been named Carrier dealer in Charlotte, N. C.

AIR-COOLED TROLLEY COACH DUE SOON

A significant "first" in modern urban transportation is a fully air-conditioned trolley coach, soon to be delivered to Georgia Power Co.

With all-weather comfort its keynote, the new coach will maintain the appearance of the standard trolleybus. The air-conditioning equipment has a cooling and dehumidifying capacity equal to that used on latest design railway cars, and twice that required for inter-city busses.

The reason for this large capacity

is the high concentration of passenger load and frequent opening and closing of doors.

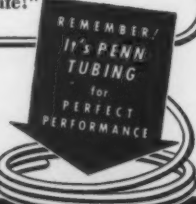
The system consists of two Carrier air conditioning units and one Freon compressor, driven by a 600-volt D. C. motor, receiving current from the trolley system. Two separate air-cooled condensers are used, each provided with fan and motor. Cooling capacity control is automatic. The driver can use the fans of the air conditioning units to provide ventilation without the use of the refrigeration machinery, if he so chooses.

PETE and PAT . . . The PENN-TUBE Pals



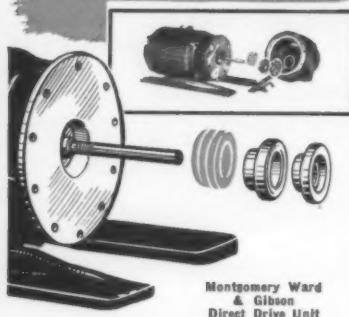
"Hurry! We've gotta rush job! Penn Tubing is bright as gold, but you needn't keep it in the safe!"

Bright as gold, PENN TUBING is clean and free from foreign matter. Does the job right the first time—means gold in your pocket. Ask your jobber for all sizes 1/8" to 3/4" inclusive, 25-, 50- and 100-ft. coils.



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Manufacturers "SUPERIOR" BRAND *Tubing*
SEAMLESS REFRIGERATION
1920 · 1945 ★ OUR 25TH ANNIVERSARY

Here is
Another
Example



OF THE

"ELASTIC SLEEVE"

PRINCIPLE

applied to the Solution of a
difficult seal problem

Now—ready for shipment. If your
jobber can't supply you, order direct
from us.

Yes, We've Done It Again!

Our model GSH-O for Gibson and
Sparton is spectacular in its simplicity,
and ease of installation.

THE ELASTIC SLEEVE SEAL il-
lustrated is one of the many designs
now available for all types of rotary
shafts. Write us your problem and
we will be pleased to recommend the
seal best suited to your need.

Write for Descriptive Folder

TEMPERATURE

Control Devices

NEW HAVEN 15, CONNECTICUT

BEFORE YOU WEEP...

Continued from page 31

to the service operation. These prices should be compared with competitors' prices for similar services. If the established prices are too low, they should be readjusted with the manufacturer's approval, and then they should be submitted to the OPA for approval before the transfer. If the OPA will not allow the increase, the manufacturer should be asked to make up the difference necessary to return to the independent a fair profit for his services.

7. Advertising

A mailing campaign to notify users of the change of address and announcing the appointment of the independent as the authorized service outlet must be made. The expense of this announcement is usually assumed by the manufacturer. He also assumes a portion of the expense of advertising space in the classified directory for the first year of operation.

8. Finance

It is essential that a careful budget be established to determine the amount of new capital, and readily

available funds are required to finance this added service operation. If the independent's funds are insufficient, he should make these facts known to the manufacturer.

Arrangements can often be made to allow liberal terms on inventory, but the independent should not over-extend himself and get into financial difficulties. Since manufacturers are notoriously slow in passing credits allowed by their service policy, due allowance must be made for this time-lag factor.

And here are a few final reminders, summarized:

The addition of a service operation on a fast-moving appliance to an independent service company is a big undertaking. Most manufacturers will have one of their field service men in attendance. He acts as an impartial referee on the transfer of inventory and equipment, and he will also assist

IN a new frozen foods merchandising wrinkle, the A & P Tea Co. is offering quick-frozen fish steaks and fish fillets on the basis of "your money back" and then some.

If the steak or fillet isn't satisfactory, the A & P will not only return the cost of the merchandise, but also the cost of the complete menu in which it was served.

NEW '45 EDITION



REFRIGERATION SERVICE MANUAL

"This book really helps you earn more"

Topics for...

- Service Men
- Maintenance Men
- Dealers
- Engineers

Only \$2.00 Written by H. P. Manly, refrigeration authority, this NEW book covers refrigeration problems in conversational language so that its 300 pages and 138 diagrams and illustrations can't miss being a real HELP TO YOU. Covers practically every operation in field service and shop operations which may be required. Includes domestic types of refrigeration, and fully and completely explains the commercial types in small and medium sizes, such as used in markets, milk depots, soda fountains, flower shops, etc., as well as in many air conditioning systems.

INCLUDES GAS REFRIGERATION

The new '45 Refrigeration Service Manual covers repairs and maintenance of gas refrigerators and systems... Only \$2.00 leaves nothing to doubt... explained clearly and concisely.

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Please send me the NEW complete '45 edition of Refrigeration Service Manual... S.O.D. If book is not entirely satisfactory, I'll return it in 5 days and you will refund my money. I'll pay the postman \$2.00 plus few cents postage. SAVE 10% Enclose \$2.00 and we'll pay postage, saving you approximately 10%. Same Money Back Guarantee. Name..... Address..... City..... State..... Money enclosed..... Send S.O.D.....

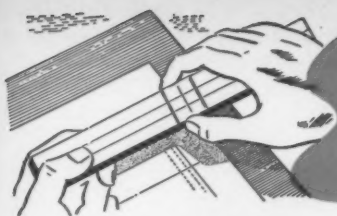
by holding service schools. It is common practice for this field man to serve as the manager of the new service operation until it is functioning smoothly, but the independent should have a man capable of handling this work assisting the field man at all times.

The independent must organize this new service operation so that it becomes a vital part of the manufacturer's or distributor's sales department. Prompt attention to all service calls and complaints must be maintained. Continuous training in service work must be carried on, and a permanent campaign on good manners and courtesy is essential.

When an independent organization assumes the obligations and responsibilities of becoming the authorized service agency of an appliance line, he changes the tempo of his operation from that of a jobbing shop to a fast-moving production line factory.

Good organization and honest sincere effort will bring him both a good return on his investment and an enhanced and respected reputation in the industry.

THE REFRIGERATION INDUSTRY



New PRODUCTS

Air Conditioning Equipment

Plans are now complete to turn a large part of the heavy ordnance manufacturing facilities of the Worthington Pump & Machinery Corp.'s plant in Holyoke, Mass. into production of air conditioning and refrigeration equipment. Facilities



for the operation have been moved there from the corporation's plant in Harrison.

Engineers are concluding designs for a new line of Freon-12 refrigerating compressors. Also to be produced at Holyoke will be a line of air handling equipment including air conditioning units, shower condensers, product coolers, and exaporative coolers in a wide range of sizes and capacities. A complete test laboratory for refrigeration equipment has been installed. Assembly line methods have been set up in the same shop where thousands of 90 mm. anti-aircraft guns were produced in the early part of the war. The company's air conditioning and refrigeration operation is under the management of C. E. Wilson, vice president and M. M. Lawler, manager.

Filter Fluid

A glue-glycerine-water solution, developed at the laboratories of the

Glycerine Producers Association of New York, is said to make a good moistening material for filter bases such as are used in air conditioning and heating systems. The solution used is 0.2% glue in 50% glycerine. The material can be washed when the filter becomes dirty, it is said, and a fresh solution applied, an economy over the throw-away types.

Low-Temp Cabinet

"Polar Freez," a cold storage cabinet in 8, 12 and 16 cu. ft. sizes, has gone into production by Schelm Bros., Inc., East Peoria, Ill.

The company, it is said, will manufacture a new line of domestic and commercial appliances including air conditioning units, furnace blowers, attic fans, as well as a line of automotive trailers and truck bodies. The units will be sold nationally through appliance distributors and dealers.

Freezer-Cooler

Amana Society, Amana, Iowa, has just announced its model 200 freezer-cooler, combining services of home freezer and frozen food compartment with a large-size cooler. The unit has 100 cu. ft. of normal tempera-



ture cooler space, and a 23 cu. ft. zero quick-freeze and storage compartment.

Entire unit consists of six factory pre-fabricated sections; freezer section is a self-contained unit with all

Keep 'em running!



● You can service those worn-out motor capacitors and keep their electric refrigerators running, with handy Aerovox replacements. And at a nice profit, too. Here's how:

UNIVERSAL REPLACEMENTS

Aerovox offers 22 universal types of electrolytic replacement capacitors for 110-volt operation; 6 types for 220-volt.

These 28 universal types can take care of upwards of 90% of all motor-starting capacitor replacements.

Handy Aerovox conversion chart indicates universal replacement equivalent for any previously available type. Consult that chart!

● Ask Our Jobber!



Capacitors

INDIVIDUALLY TESTED

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VISOLEAK

Detects leaks in refrigeration equipment before they cause damage to expensive installations and loss of costly products.

Years of use have proven **VISOLEAK** to be dependable, economical, safe and easy to use. See your refrigeration supply jobber or write for complete information.

*finds
hidden
refrigerant
leakage*

WESTERN THERMAL EQUIPMENT CO.
5141 Angeles Vista Los Angeles 43 Calif.

*If your AIR-CONDITION-
ING OR REFRIGERATION
EQUIPMENT has gone
to War...*



If the equipment you are now manufacturing is essential to war production plants, housing projects, or to the armed forces,

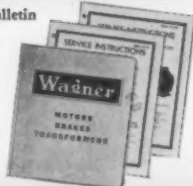
Wagner will gladly figure with you on your motor requirements. Consult the nearest of Wagner's 29 branches, located in principal cities and manned by trained field engineers.

Write For Bulletins

You should have Bulletin MU-185 (Single-phase and Polyphase Motors).

You should also have Service Bulletins MU-7B and MU-30B.

M45-20



Wagner Electric Corporation

ESTABLISHED 1911
6442 Plymouth Avenue, St. Louis 16, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS

machine, electrical and refrigeration equipment, and may be operated on either 110 or 220 volts. Cooler section carries a temperature of 36 to 40°F. Meat rails and adjustable hooks are conveniently located and accommodate whole carcasses or smaller cuts.

Slatted shelves are provided for butter, cheese, beverages and other foods, and there is a lower storage compartment with space for cooling milk and cream in cans, cases of eggs, beverages etc. Walk-in section has a forced-air cooling unit, with dial-type temperature control.

Quick freeze section has four heavy duty freezer plates for contact freezing; door is of normal height so that it can be used most conveniently. Air-cooled compressor, of heavy duty type, can be serviced from outside the unit by removing rear inspection panel.

Water Cooler, Home Freezer

Two new Norge products have been announced recently for mass marketing as soon as available. They are a portable water cooler and a farm freezer.

The portable water cooler, said to be the first small, easily transportable unit ever to be offered, is adaptable for use in offices, homes, hospitals, hotels, clubs and elsewhere. Capacity of 1½ gallons can be cooled in one

hour; it is styled to hold a one-gallon bottle, or can be filled from a pitcher. Dimensions are 22 inches wide, 13 high and 12 deep. If desired, however, a five-gallon bottle may be used



with the cooler. Cup dispenser is attached to the front of the cabinet.

The home and farm freezers will be offered initially in four sizes, three for city or suburban homes and the fourth for the farm. Capacities will be 6, 11, 18½ and 26 cu. ft. The units will be of chest-type, lift lid construction, and will be modernly styled to blend with other appliances.

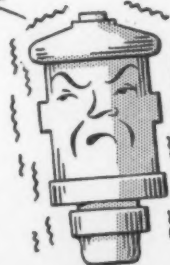
Powering the portable water cooler will be a ½ H.P. rollator hermetically-sealed unit. The freezers will be equipped as follows: 6-foot unit, ¼ H.P.; 11-foot unit, ¼ H.P. unit; 18½-foot unit, ½ H.P.; 26-foot unit, ½ H.P. The larger unit will be a three-section model, while the mid-

MAGIC IN A SMALL BOTTLE

**FREEZE-UPS
ELIMINATED
RIGHT AWAY!**



ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems . . . The dependable liquid anti-freeze.



"ONE SERVICE MAN TELLS ANOTHER - IT'S GREAT"
ORDER FROM YOUR JOBBOR OR -

EXCLUSIVE NATIONAL DISTRIBUTOR
THE HARRY ALTER CO. 1728 S. MICHIGAN AVE.
CHICAGO 16, ILLINOIS

JOBBERS: WRITE FOR SPECIAL PROPOSITION!

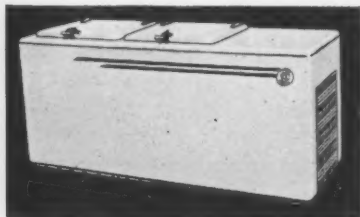
size models will have two compartments and the 6-foot unit a single compartment.

Tube Bender

A manually operated tube bender is being made by the Leonard Precision Products Co., Garden Grove, Calif. The bender handles non-ferrous tubing from $\frac{3}{8}$ -inch to $1\frac{1}{4}$ -inches outside diameter, and is said to be capable of producing from 1 to 10 bends in a 9-foot length of tubing. Bends can be made at any radial angle up to 180° , it is said.

HOME LOCKERS PLACED ON SALE AT MACY'S

New home lockers for frozen foods have recently been placed on sale at R. H. Macy & Co., New York City, at approved OPA prices. Four models, manufactured by Refrigeration Corp. of America, were in the



initial display. The "Frigid-Freeze" units, of 6, 10, 14 and 20 cu. ft. capacity, were priced to retail at \$250, \$350, \$450 and \$595, respectively. Delivery time, depending upon the model, was between two and ten weeks.

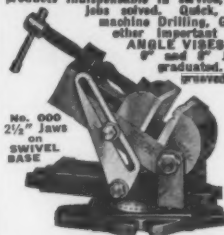
Special features of the models are the "Zero Sentinel", a double alarm system which prevents spoilage of food, and "Freeztrol", a low temperature modulator which is said to make possible the conversion of storage space into quick-freezing space. Four inches of insulation is used on top and sides, 5 inches at bottom. Special type hardware is used, with locking device.

John Bess, Refrigeration Corp. president, said that the policy with the first group of home lockers would be to confine sales operations to organizations such as Macy's and other department stores and dealers with whom it has done business in the past. He emphasized, however, that new dealer franchises are continuing to be set up.

PALMGREN

ANGLE VISES for REFRIGERATION REPAIRS

Refrigeration Repair Shops and Jobbers are finding these two products indispensable in service, profits, success. Difficult angle jobs solved. Quick, accurate set-ups for hand or machine Drilling, Grinding, Filing, Fitting and 181 other important shop operations. PALMGREN ANGLE VISES are made with $1\frac{1}{2}$ "-2 $\frac{1}{2}$ "-4"-6" and 8" jaws. Accurately machined and graduated. Hardened steel jaws, plain or grooved.



No. 000
2 $\frac{1}{2}$ " Jaws
ON
SWIVEL
BASE

Milling Attachment Vise For Lathe

Save time, do milling jobs on lathe. Increase volume. Adaptable for South Bend, Atlas, Craftsman, Sheldon, etc. Graduated vertical feed screw and 360° graduation for vertical angle adjustments. Mounts by straddling regular tool post. No. 235 has 2 $\frac{1}{2}$ " Jaws, 1-7/16" deep, grooved and plain. Price \$24.75. No. 400 has 4" Jaws 1 $\frac{1}{2}$ " deep \$35.75. Write for Circular No. 506 and Jobber Helps

CHICAGO TOOL AND ENGINEERING CO.

Mfrs. of PALMGREN PRODUCTS for over 25 years.
5410 South Chicago Ave. Chicago 17, Ill.



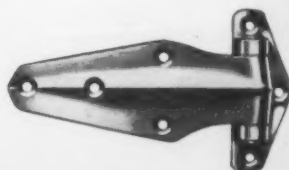
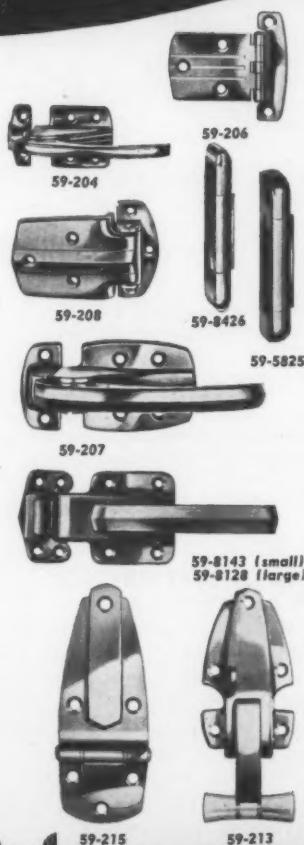
NOW
AVAILABLE!

REFRIGERATOR HARDWARE

complete sets in matching designs

An attractive set of stock Refrigerator Hardware is now available through your Jobber. This standard line will harmonize and be in good taste with the design of refrigerators, coolers and cabinets.

Because we are the largest manufacturer of Refrigerator Hardware in this country, we are supplying your Jobber so he can serve you without delay. Consult him for prices and other information.



59-8428



Manufactured by
NATIONAL LOCK COMPANY
Refrigerator Hardware Division • Rockford, Illinois

The MARKET Place

RATES: minimum, 25 words, \$2.00; each additional word, 10c. Bold type or all capitals: minimum, 25 words, \$3.00, additional words, 15c. All insertions are payable in advance.

HELP WANTED

COMMERCIAL REFRIGERATION service man. Exceptional opportunity, permanent position. Hourly rate plus commission, car allowance and profit-sharing arrangement. Must have ability and experience in servicing industrial, commercial and air conditioning equipment. We are a well-established firm located in northern Ohio. Box 8452, Refrigeration Industry.

WANTED

EXPERIENCED refrigeration service men for commercial and domestic refrigeration work by established central Wisconsin firm. Good working conditions, hourly wage plus commission, truck furnished. Please state full qualifications in letter. Write Box 1052, The Refrigeration Industry.

SERVICE MANAGER with ability to organize service department and train men for organization engaged in domestic and commercial refrigeration, covering 17 Northern Ohio counties. Ample facilities to create outstanding department. State

full particulars and salary requirements in first letter. Box 8453, Refrigeration Industry.

REFRIGERATION SERVICE MEN WANTED

REFRIGERATION service men experienced in repair maintenance and or installation of Freon refrigerating and air conditioning systems wanted for immediate employment by one of oldest refrigeration companies in Florida. Location of employment to be at West Palm Beach. Fall and Winter seasonal employment will be considered. Write giving qualifications, full details of education, training, and experience, along with references, and salary or hourly rate expected. Box 1051, The Refrigeration Industry.

Refrigeration service men, commercial, domestic, shop or field service. Motor repair man. \$1.50 per hr., commissions on all parts and merchandise. Full time. Excellent post war opportunities. Acme Refrigeration Engineering, 234 Seventeenth St., Merced, Calif.

FOR SALE

For Sale: Remanufactured air and water-cooled condensing units ¼ H.P. up to 1½ H.P. Frosted Food & Ice Cream Cabinets. Edison Cooling Corp., 310 East 149th St., New York 51, N. Y.

HOME FROZEN FOOD CABINETS

Reach in type, guaranteed full cork board insulation. 8, 12 and 16 ft. sizes. With or without condensing units. Nice margin of profit can be made.

Write us for prices

GEORGE B. BRYSON
221 Carlton Ave. S.E.
Grand Rapids 6, Mich.

FRANCHISES WANTED

Sales and service organization desires connection with manufacturer or distributor of all home appliances, washers, refrigerators, radios, gas and electric stoves. Maurice Hanson, 327 E. Pikes Peak, Colorado Springs, Colo.

NAMED DISTRIBUTOR IN EL PASO AREA

Wallace C. Johnson, manager of field activities for Admiral Corp., has announced appointment of Sun City Distributors, El Paso, Tex. as distributor for the El Paso and Albuquerque, N. M. territories.

SERVICE AGENCY MOVES TO NEW LOCATION

W. G. Carey Co., authorized Norge service agency in Portland, Ore., has recently moved its office and shop to a new location at 20 S.E. 8th Ave., Portland 14.

OPPORTUNITY IN REFRIGERATION

Leading midwest manufacturer of refrigeration condensing units wants to contact a . . .

Refrigeration Service Engineer thoroughly schooled in all phases of DOMESTIC REFRIGERATION. Must be capable of meeting the public, preparing service manuals and parts lists and handling correspondence. Permanent and attractive for the man who can qualify. In your letter, please outline experience and education; give age, marital status and salary requirements.

Address Box 1054, The Refrigeration Industry.

OPPORTUNITY IN REFRIGERATION

Leading midwest manufacturer of refrigeration condensing units requires the services of a

Refrigeration Service Engineer thoroughly schooled in all phases of COMMERCIAL REFRIGERATION. Must be capable of meeting the public, preparing service manuals and parts lists and handling correspondence. Permanent and attractive for the man who can qualify. In your letter, please outline experience and education; give age, marital status and salary requirements.

Address Box 1053, The Refrigeration Industry.

TOPS! for LOW TEMPERATURE

DOLE
Vacuum
COLD PLATES

Maximum Refrigeration Efficiency

for all
**REFRIGERATION
PURPOSES**


Investigate . . . then you will specify . . . **DOLE Vacuum Cold Plate Evaporators** for maximum refrigeration efficiency.

See your Refrigeration Dealer

Dole Refrigerating Company
5910 N. Pulaski Rd., CHICAGO 30, ILL.
New York Branch:
103 Park Avenue, New York 17, N. Y.




"WHEN A JOB CALLS FOR MORE THAN ONE EVAPORATOR ON A SINGLE UNIT

I call for an  MODEL 235 Suction Pressure Valve . . . It's a good feeling to know what a Valve can do . . . and I know! . . ."

THAT is the comment from a Refrigeration Service Engineer when we asked him regarding his personal experience with "A-P" Valves.

Confidence like this is based on practical, day-in day-out experience in maintaining the nation's refrigerating machinery in spite of today's difficulties and handicaps. It is a trust shared by a widespread army of refrigeration service engineers who know that dependable "A-P" Controls, Valves, and Solenoids save them time-wasting call-backs — insure customer satisfaction.



 has cracked some hard nuts in the way of refrigeration servicing problems. Always feel free to consult us about yours!

AUTOMATIC PRODUCTS COMPANY

2485 NORTH THIRTY-SECOND STREET

MILWAUKEE 10, WISCONSIN

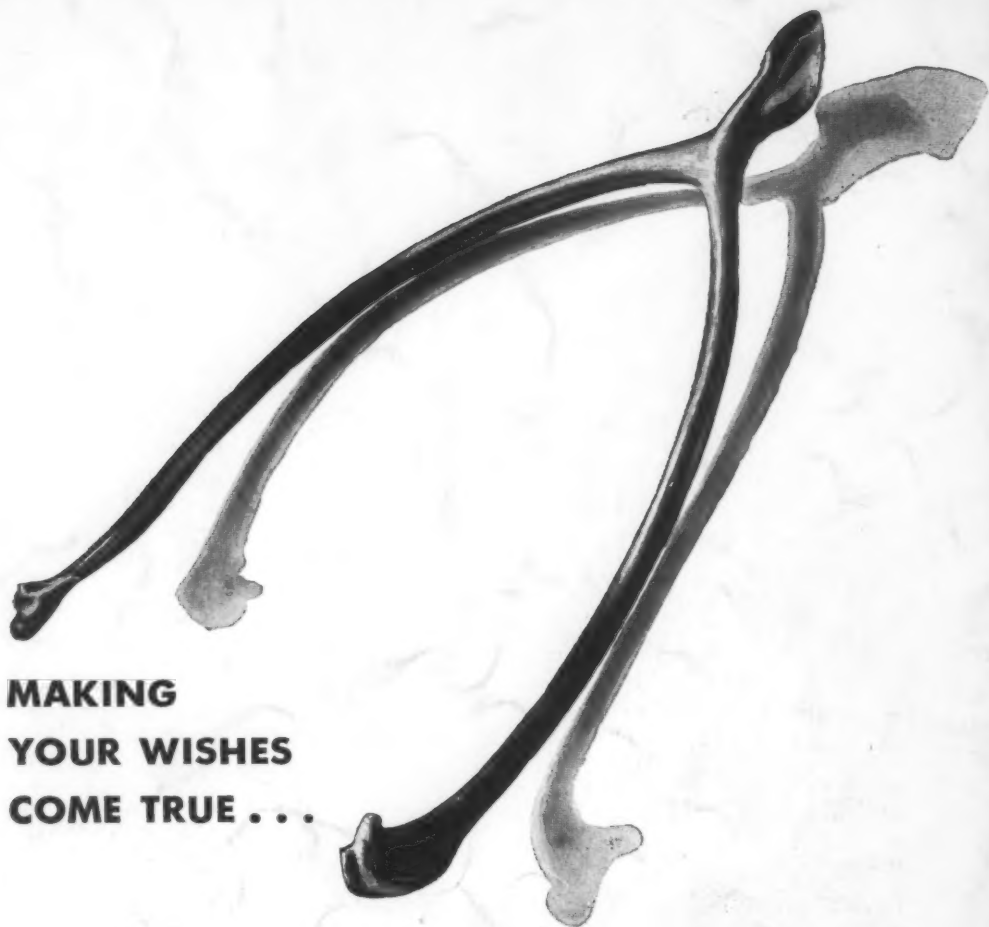
Export Department — 13 East 40th Street, New York 16, New York

Illustrated Bulletins and full information sent upon your request.



DEPENDABLE *Refrigerant Valves*

STOCKED AND SOLD BY REFRIGERATION JOBBERS EVERYWHERE . . . USED AND RECOMMENDED BY REFRIGERATION SERVICE ENGINEERS



**MAKING
YOUR WISHES
COME TRUE . . .**

One wish has been fulfilled. Won by 3½ years of deadly struggle. With God's help, we have prevailed.

Now we have a chance to make another wish come true. For most of us, the outlook is a bright one. If we will simply use the brains, the will, the energy, the enterprise . . . the materials and resources . . . with which we won our war, we can't fail

to win the peace and to make this the richest, happiest land the world has known.

Your wishes have been wrapped in that bright outlook. Your wish for a cottage by a lake. For your boy's college education. For a trip you long to take. For a "cushion" against emergencies and unforeseen needs.

You can make those wishes come

true by buying bonds today . . . buying them regularly . . . and holding on to them in spite of all temptation.

There's no safer, surer investment in the world. You can count on getting back \$4 for every \$3 you put in—as surely as you can count on being a day older tomorrow.

So why not be patriotic and smart at the same time?

**FULFILL YOUR WISH—BUY EXTRA BONDS
IN THE GREAT VICTORY LOAN!**

THE REFRIGERATION INDUSTRY

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